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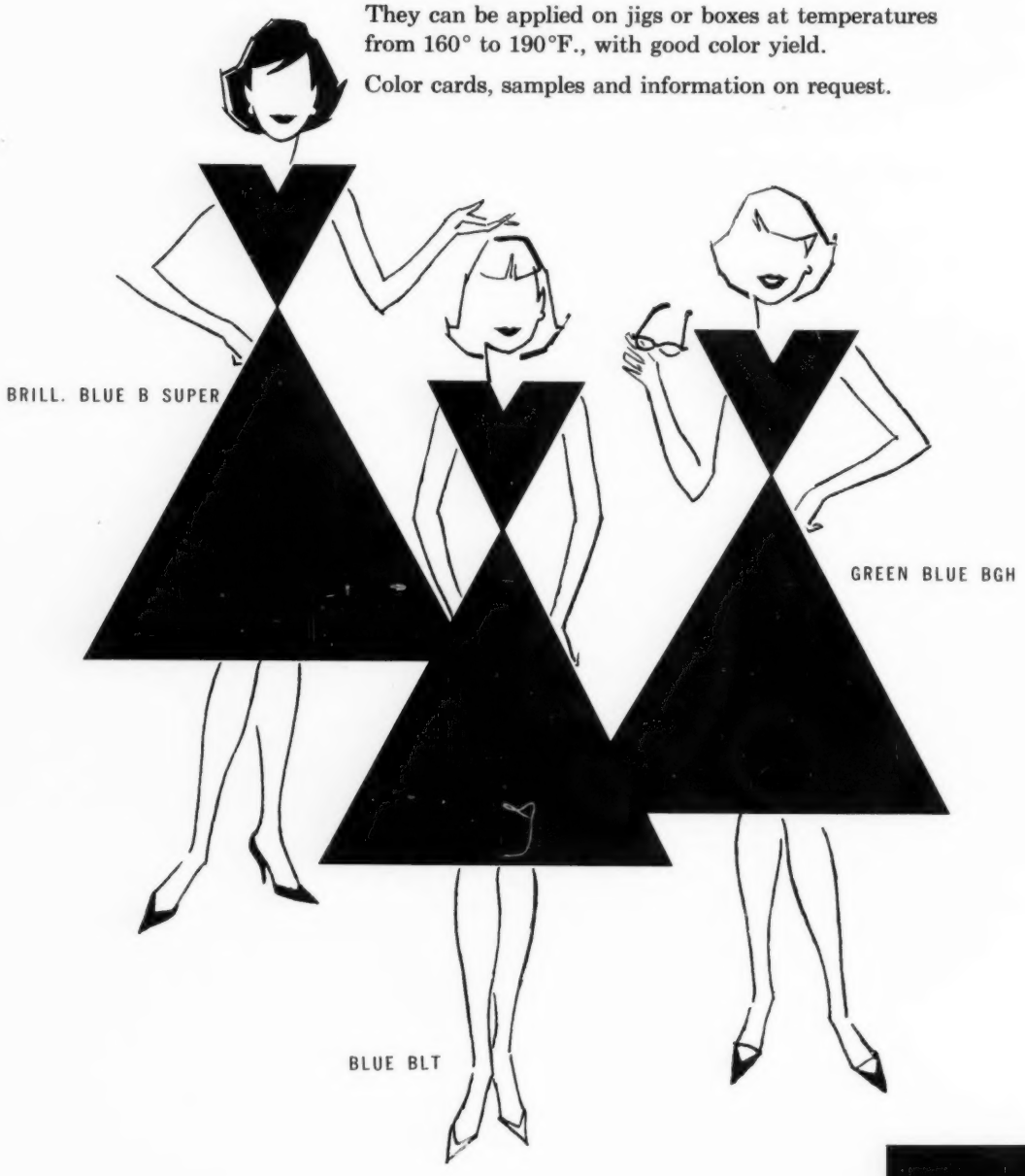

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DYESTUFF REPORTER

Volume 49 February 22, 1960 Number 4

IDENTIFICATION OF TEXTILE COATINGS BY INFRARED SPECTROSCOPY

FLORENCE H FORZIATI, ROBERT T HITE, and M KATHRYN WHARTON

Textiles Section, National Bureau of Standards

Washington, DC

A method is described for the qualitative analysis of very small specimens of coated textiles. By a series of extractions, the specimen is separated into a number of fractions which are identified by infrared spectroscopy. The method provides rapid and positive identification of most components of textile coatings. However, a number of inorganic pigments do not absorb in the infrared region of the spectrum and require other methods of identification.

INTRODUCTION

As the infrared spectrum is one of the most specific molecular properties, it provides convincing evidence for proving or disproving the identity of two compounds. For this reason and because of the ease and rapidity with which infrared spectra can be obtained, the smallness of the samples required, and the fact that positive identification of one compound in the presence of another is often possible, infrared spectroscopy has replaced qualitative chemical analysis to a considerable extent in many laboratories. During the past few years, it has been used extensively in the characterization of textile coatings at the National Bureau of Standards. This paper describes the method used and presents illustrative examples of analyses.

EXPERIMENTAL

As in the methods described by Skinkle (*1*) and by Krammes and Maresh (*2*) for the qualitative chemical analysis of textile finishes, the textile specimen is extracted with two portions of each of the following liquids in the order named: carbon tetrachloride, denatured alcohol[1], water, dioxane, and 2% aqueous hydrochloric acid. The solvent is removed by evaporation from the first extract obtained with each of these liquids and the residue is used for spectroscopic analysis. The second extract, which is obtained in an effort to effect as near quantitative separation as possible, is usually discarded.

The solvents used must be free of infrared-absorbing impurities that are nonvolatile at or near room temperature. To determine whether such impurities are present, a 10- to 15-ml portion of the solvent is evaporated to dryness in a mullite mortar by warming gently. Powdered potassium bromide (150 mg) is added and ground with a pestle to insure thorough mixing with any residue that may be present. The mixture is then transferred to a pellet die, evacuated for 30 minutes at a pressure of less than 100 microns of mercury, and then subjected to a pressure of 100,000 to 110,000 psi for 10 minutes with the system still under vacuum[3]. The resulting pellet (23/32 in × 3/16 in) is placed in a pellet holder which fits into the microcell adapter of the Perkin-Elmer Model 21 Spectrophotometer.

If the pellet is found to contain infrared-absorbing material, the solvent must be purified before use. The authors have found this to be necessary only with carbon tetrachloride and dioxane. The carbon tetrachloride is passed through a silica gel column (12 inches long) immediately before use to remove moisture and the nonvolatile infrared-absorbing impurities that are sometimes present. Dioxane, which decomposes on stand-

[1]95 volumes of 95% ethanol with five volumes of absolute methanol.

[3]For a discussion of the KBr pellet technique see Stimson and O'Donnell (*3*).

TABLE I

Fractions removed from coated textiles by extraction

Solubility of fraction	*Possible components of fraction*[1]
Soluble in carbon tetrachloride	oils fats waxes phosphate, phthalate, sebacate, adipate, etc plasticizers poly(vinyl acetate) ethyl cellulose
Insoluble in carbon tetrachloride; soluble in denatured alcohol[2]	glycols glycerol sulfated oils rosin salts cellulose nitrate
Insoluble in carbon tetrachloride and denatured alcohol[2]; soluble in water	starch gums casein gelatin animal glue
Insoluble in carbon tetrachloride, denatured alcohol[2], and water; soluble in dioxane	cellulose acetate cellulose nitrate poly(vinyl acetate chloride) poly(vinyl chloride)
Insoluble in carbon tetrachloride, denatured alcohol[2], water, and dioxane; soluble in or decomposes to give soluble products in 2% HCl	urea-, melamine-, and casein-formaldehyde resins starch glue casein
Insoluble in organic solvents; released from coated fabric by solvents which dissolve film-forming components	clays, ferric oxides, zinc oxide, titanium dioxide, Prussian Blue, etc

[1]The components listed are only some of the many materials found in coated textiles.

[2]95 volumes of 95% ethanol with five volumes of absolute methanol.

ing to give nonvolatile infrared-absorbing material, is allowed to stand with sodium hydroxide pellets for 24 hours and then distilled in the presence of metallic sodium immediately before use. The first and final 10 percent of the distillate are discarded.

The specimen of treated textile, usually between 1/16 square inch and 1/2 square inch in area depending on the amount of coating present, is placed in a five-ml fritted glass disc (coarse porosity) extraction thimble which rests on the bottom of a flat-bottom tube just larger in diameter than the thimble. Three ml of carbon tetrachloride are pipetted into the thimble and the entire assembly is placed in a hot water bath with the temperature adjusted so that the solvent simmers gently. After three minutes, the assembly is removed from the water bath and the thimble is raised with forceps to allow the extract to drain through the fritted disc into the flat-bottom tube. The extract is transferred to a mullite mortar and the solvent removed by warming slightly. If the residue is a liquid and the amount permits, a thin film is cast on a rock-salt plate or a blank potassium bromide pellet and the spectrum is recorded. Otherwise, whether a residue is visible or not, potassium bromide (150 mg) is added to the mortar, ground with a pestle to insure mixing with any residue, pressed into pellet, and the spectrum of the pellet is recorded.

The original textile specimen, still in the extraction thimble, is next placed in a micro Soxhlet apparatus and extracted with carbon tetrachloride for an hour with the Soxhlet emptying approximately every five minutes. This extract is used for analysis when further work on the carbon tetrachloride-soluble fraction is required. The entire two-stage extraction procedure is repeated using denatured alcohol, water, and dioxane in that order. As with carbon tetrachloride, the first extract obtained with each liquid supplies the material for spectroscopic analysis; the second supplies material for further analytical work as needed but is usually discarded.

Finally, the specimen is extracted with three ml of 2% aqueous hydrochloric acid for 15 minutes in a boiling water bath. This extract is evaporated to dryness and the residue examined spectroscopically in the usual way. A second extract is prepared in the same way and discarded.

Any nonfibrous solid that is released from the specimen by a solvent is washed with the solvent and exam-

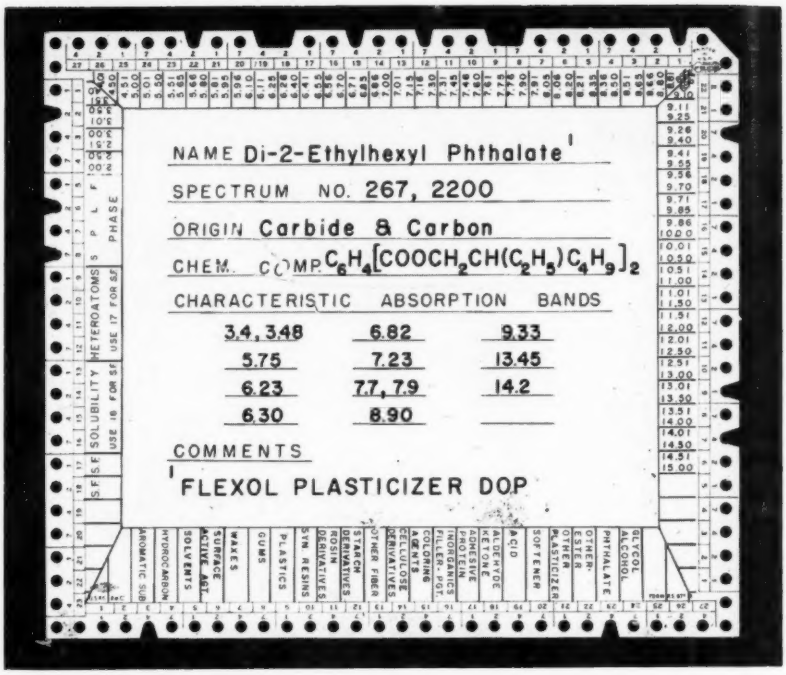

Figure 1
Punch card giving information from reference spectrum of di-2-ethylhexyl phthalate.

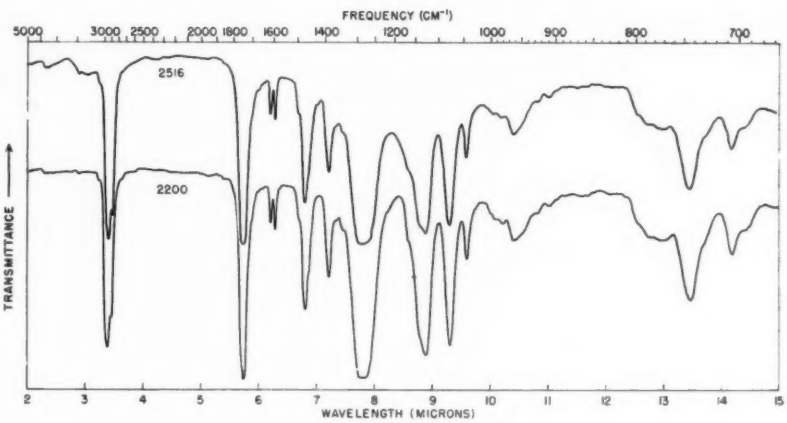

Figure 2
Infrared spectra of carbon tetrachloride-soluble fraction from textile coating of unknown composition (spectrum 2516, liquid) and di-2-ethylhexyl phthalate (spectrum 2200, liquid).

TABLE II
Analysis of a coated fabric

Fraction	*Composition as determined by infrared spectroscopy*
Soluble in carbon tetrachloride	Di-2-ethylhexyl phthalate (see Figure 2)
Insoluble in carbon tetrachloride, denatured alcohol[1], and water; soluble in dioxane	Poly(vinyl chloride) contaminated with di-2-ethylhexyl phthalate (see Figure 3)
Nonfibrous green powder freed from specimen on solution of poly(vinyl chloride) with dioxane	Calcium carbonate and silica and/or silicate (see Figure 4). (Spectrographic analysis confirmed the presence of calcium and silicon and also showed that compounds of aluminum and chromium were present.)

[1]95 volumes of 95% ethanol with five volumes of absolute methanol.

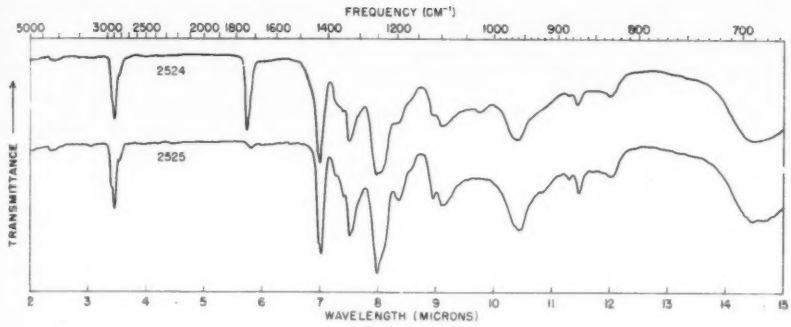

Figure 3

Infrared spectra of dioxane-soiuble fraction from textile coating of unknown composition (spectrum 2524, film)[1] and poly(vinyl chloride) (spectrum 2525, film).

[1]The absorption band at 5.8 microns in specrum 2524 is attributed to contamination with the carbon tetrachloride-soluble fraction (Figure 2).

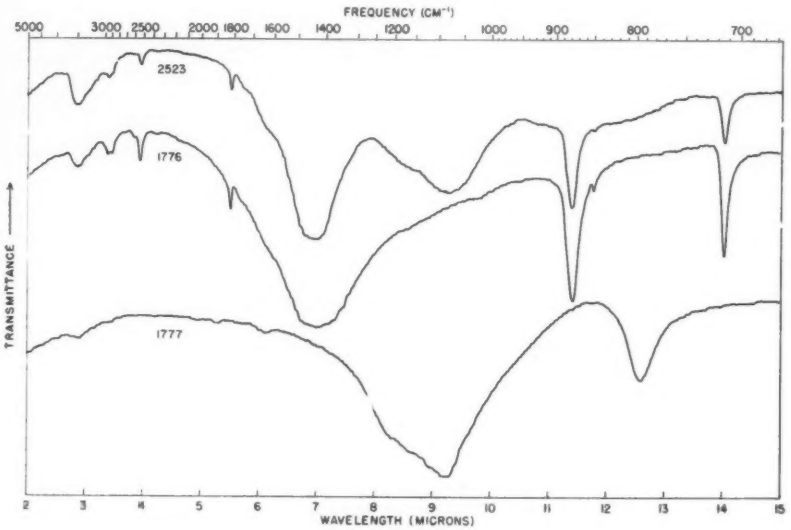

Figure 4

Infrared spectra of nonfibrous green powder released from textile coating of unknown composition on removal of poly(vinyl chloride) with dioxane (spectrum 2523, KBr pellet), calcium carbonate (spectrum 1776, KBr pellet), and amorphous silica (spectrum 1777, KBr pellet)[1].

[1]The failure of spectrum 2523 to show the absorption band at 12.6 microns which is shown by spectrum 1776 is attributed to the fact that this band is weak in comparison to the silicate band at 8 to 10 microns and is thus not visible when the silicate concentration drops below a certain value.

ined spectroscopically, using the potassium bromide-pellet technique. If the fiber of the extracted fabric is to be identified spectroscopically, a pellet is used whch consists of 150 mg of potassium bromide and one or two mg of powdered fiber obtained by cutting yarn bundles in a Hardy cross-sectioning device with a razor blade.

The fractions isolated from the treated textile are identified by matching their spectra with spectra obtained from known materials and maintained as a reference collection. As this collection includes several hundred spectra[5], a Keysort punch card system is used to facilitate the matching of spectra. The punch cards (Figure 1) show the position of principal absorption bands and provide information on the solubilities and classification or use of the materials.

Supplementary techniques, such as spectrographic analysis and microscopy, are used as required to provide additional information on the coated fabrics.

[5]This collection of reference spectra has not been published but numerous spectra of interest to the analyst of textile coatings are to be found in the literature [4 to 12, inclusive].

RESULTS AND DISCUSSION

Table I lists some of the many materials found in textile coatings and shows which of the aforementioned solvents removes them from treated textiles. Table II summarizes analytical results obtained on fractions isolated from 0.25 square inch of a coated upholstery fabric. As shown by Table II, the series of extractions resulted in the removal of two soluble fractions and one insoluble fraction from the coated fabric. The infrared spectra of the soluble fractions showed the coating to consist of poly(vinyl chloride) plasticized with di-2-ethylhexyl phthalate (Figures 2 and 3). The spectrum of the insoluble fraction, a green powder released from the specimen on solution of the poly(vinyl chloride), showed that the coating contained calcium carbonate and silica or silicate (Figure 4).

Spectrographic analysis carried out on another portion of the insoluble fraction in an attempt to obtain additional information on the inorganic components of the coating confirmed the presence of calcium and silicon compounds and in addition showed that aluminum and chromium compounds were present. These compounds could not be detected by infrared spectroscopy even after removal of the calcium carbonate from the insoluble fraction by treatment with hydrochloric acid but it is probable that the aluminum was present as the oxide or as a silicate. That the chromium was not present as Chrome Green [CI Pigment Green 15 (*13*)] was shown by the absence from spectrum 2523 (Figure 4) of an intense absorption band at 4.78 microns, characteristic of the $-CN$ group of this pigment (Figure 5), and by the absence of iron and lead as revealed by spectrographic analysis of the insoluble green fraction.

The fiber from the coated fabric was shown by infrared spectroscopy to consist of cellulose II and thus to be either a mercerized or regenerated cellulose fiber (*14*) (Figure 6). Microscopic examination of cross sections showed the fiber to be bright viscose rayon. This illustrates, as did the results obtained with the insoluble green powder, the desirability of using other techniques in conjunction with infrared spectroscopy.

The problem of identifying the fractions obtained from coated textiles from their spectra is complicated by the fact that many of these fractions consist of mixtures rather than single components. Some of these mixtures result from contamination of a fraction with an earlier but incompletely removed fraction; others

are due to the presence in the original treated textile of two or more components which have the same solubility characteristics. Mixtures of the former type usually cause little or no difficulty as the concentration of the contaminant is usually low, and if the fractions have been examined in the order in which they were obtained, the spectral characteristics of the contaminant are known. Thus, the dioxane-soluble fraction from the coated fabric discussed above was readily identified from its spectrum as poly(vinyl chloride) containing a small amount of the carbon tetrachloride-soluble fraction di-2-ethylhexyl phthalate (Figure 3).

When identification of a mixture cannot be accomplished by simple inspection of its spectrum, the reference spectra are searched for compounds whose combined spectra might be equivalent to the spectrum of the mixture. For example, when the carbon tetrachloride-soluble fraction of a cellulose nitrate coating failed to match any of the reference spectra, it was assumed that the fraction was a mixture of plasticizers. A search of the reference spectra suggested that a number of the absorption bands in the spectrum of the unknown might be due to castor oil, one of the most frequently used plasticizers for cellulose nitrate coatings. A further search of the reference spectra indicated that tricresyl phosphate might account for the absorption bands that could not be attributed to the oil. Several mixtures containing varying proportions of tricresyl phosphate and castor oil were therefore prepared and their spectra compared with the spectrum of the carbon tetrachloride-soluble fraction. As can be seen from Figure 7, this left little doubt that this fraction consisted of tricresyl phosphate and castor oil or one of the modified oils that contain hydroxyl groups (*4*) and thus cannot be distinguished from castor oil by means of their infrared spectra.

The extraction-spectrophotometric method is also used by the authors for the qualitative analysis of textile finishes, adhesives, coated papers, plastic films etc. With these materials, as well as with textile coatings, the method provides more complete information than can be obtained by chemical methods on samples of comparable size. Frequently, positive identification of fractions weighing as little as one mg is possible. With recently acquired equipment for preparing and obtaining the spectra of potassium bromide micro pellets (*15*) identification of fractions weighing as little as 0.1 mg should be possible provided the fraction consists of a single substance which absorbs at wavelengths from two to 16 microns, the region of the spectrum used in the work. As pointed out by Harkins et al (*5*), a number of inorganic compounds do not absorb in this region and hence require other means of identification.

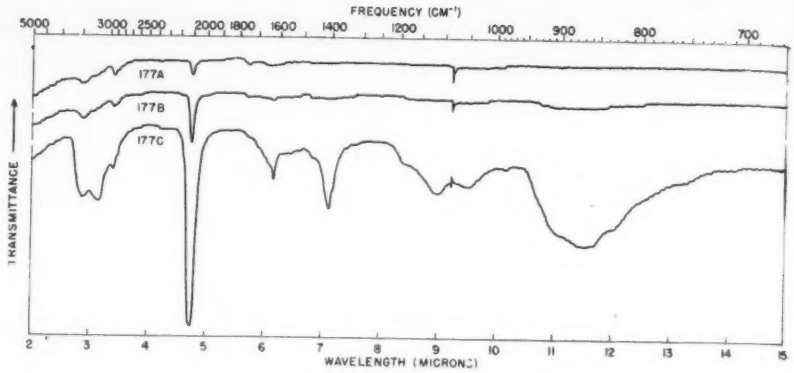

Figure 5

Infrared spectra of Chrome Green (CI Pigment Green No. 15) (spectrum 177A, 0.008 mg pigment in 150 mg KBr; spectrum 177B, 0.03 mg pigment in 150 mg KBr; spectrum 177C, 0.5 mg pigment in 150 mg KBr).

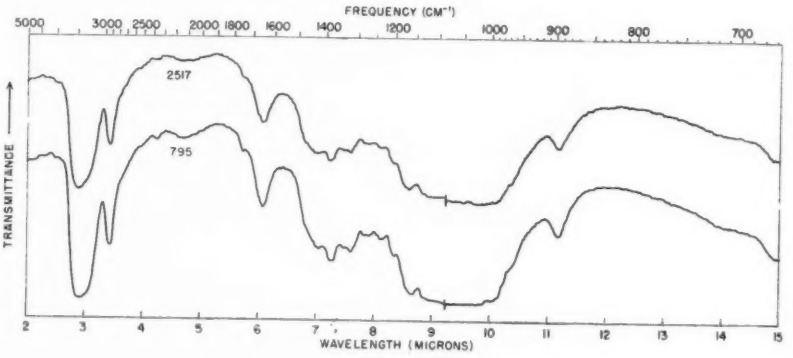

Figure 6

Infrared spectra of fiber from base fabric of unknown coated fabric (spectrum 2517, KBr pellet) and cellulose II (spectrum 795, KBr pellet).

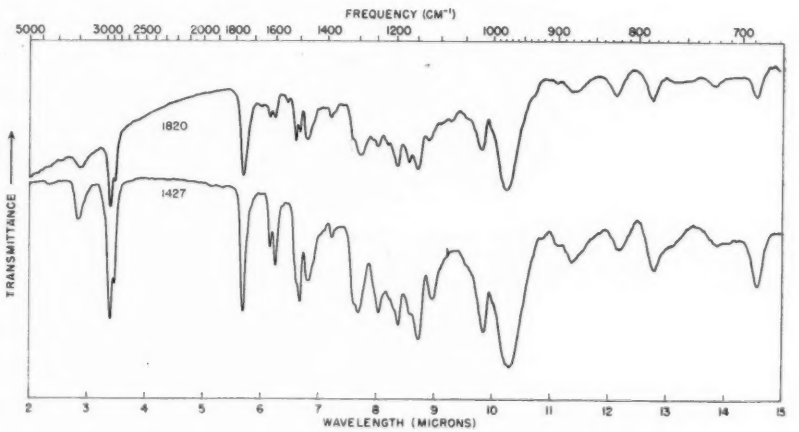

Figure 7

Infrared spectra of carbon tetrachloride-soluble fraction of unknown cellulose nitrate coating (spectrum 1820, KBr pellet) and 1:1 mixture by volume of castor oil and tricresyl phosphate (spectrum 1427, liquid).

SUMMARY

A method for the qualitative analysis of textile coatings has been described in which small specimens of coated textiles are fractionated by the extraction procedure of Krammes and Maresh (2) and the fractions identified by means of infrared spectroscopy. In general, the spectroscopic method is less time-consuming and provides more positive identification than chemical methods. For certain components of textile coatings, however, positive identification requires the use of supplementary techniques. The method is also applicable to the identification of extractable textile finishes.

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Errata

IN the article "Synthetic Resins for Chlorine-fast "Wash-and-Wear" Finishes, which appeared on pages 25 through 38 of the January 11, 1960 issue, the following errors have been noted:

1) On page 26, second column, second sentence should begin . . . "By reason of the parallel reactions ("b" and "c") . . .".

2) In Figure 4 on page 30, the heading "Treatment only with chlorine" applies to the graph on the left, and the heading "Five washings at the boil and one treatment with chlorine" applies to the graph on the right.

3) On page 32, Figure 8, the clear bar indicates dimethylol ethylene urea.

4) In Figure 14, page 35, it will be noted that there are only five captions to the left of the six sets. A sixth caption, pertaining to the fifth row, should have been included as follows: "20 washings at the boil and one chlorine treatment (AATCC)." The first four captions apply to the first four rows.

5) On page 36, Figure 15, the applicable legend at the top of the graphs is the same as that in Figure 13, page 35.

6) On page 38, there is a type scramble in two successive paragraphs, beginning in the second column with the line "The most significant practical result . . . .". Following is a reproduction of the two paragraphs as they should have appeared:

"The most significant practical result of these investigations turned out to be a reduction in the condensation temperatures hitherto recommended and described for obtaining chlorine-fast finishes, from 160-180°C (320-356°F) to 140-150°C (284-302°F) for a curing period of approximately four minutes. Although the time of drying may be reduced to two to three minutes for very high temperatures of condensation, the use of the latter is in itself a great source of danger and presents difficulty in the plant. The newly developed ethylene urea-triazine resin makes it possible to obtain excellent chlorine-fast finishes at considerably lowered temperatures of condensation and, consequently, with a high degree of plant safety. A number of further advantages are described. The favorable performance of this product with respect to water repellency in combination with the proper finishing agents should also be mentioned. Metal salts, such as zinc chloride and magnesium chloride, have proved to be suitable catalysts.

"Finally, the two reactant resins dealt with above are partially compared with carbamide and melamine resins with respect to crease angles, the fastness to washing at the boil of the latter, reduction in tensile strength, and wash-and-wear properties, and the results of these tests are given."

Future Papers

THE following papers, other than *Proceedings of the American Association of Textile Chemists and Colorists*, have been accepted for publication in future issues of *American Dyestuff Reporter:*

"Dyeing Mechanisms and Molecular Shape"—H Zollinger, lecturer, Institute of Dyestuffs Chemistry, Univ of Basle, Basle, Switzerland. (Translation of article which appeared in *Textil-Rundschau* of March, 1959).

"Formic Acid Colloid of Methylolmelamine Resin Treatment of Cotton: Preliminary Cost Study"—O J McMillan, K M Decossas, W N Berard, W A Reeves, E F Pollard, and E L Patton, Southern Regional Research Laboratory, USDA.

"The Effects of Gamma Radiation on Cotton Cellulose"—Jett C Arthur Jr, Florine A Blouin, and Robert J Demint, Southern Regional Research Laboratory, USDA.

"Pathways of Capillary Migration of Liquids in Textile Assemblies"—Francis W Minor and Anthony M Schwartz, Harris Research Laboratories; Lawrence C Buckles and E A Wulkow, U S Army Chemical Warfare Laboratories.

INDEX TO PATENT DIGEST (1959)

Following is an index, by subject and patent number, of the patent abstracts which have appeared in the "Patent Digest" during 1959. The number following each designation is in two parts—the first number indicating page, and the second (in parentheses) indicating issue number.

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Abstracts

Textiles

Tewksbury, C G and Krasny, J F, *Ind Eng Chem 52, 62A, 64A, Jan, 1960*

1959 was a banner year for the textile industry. The consumption of all types of fibers was increased over that of 1958: cotton, by 14%; wool, by 43%; the man-made cellulosics, by 23%; and the fully synthetic fibers, by 45%.

A new pyrrolidone-based nylon (Nylon 4) was announced. This material has more hydrophilic groups than nylon 6 or 6.6, and is said to have dyeing characteristics approaching those of cotton.

Other new fibers introduced in 1959 were Creslan (an acrylic) by Am Cyanamid; Darvan (a vinylidene cyanide-vinyl ester fiber) by Goodrich Chemical; and Kodel and Vycron (polyester fibers) by Eastman Chemical and Beaunit Mills resp. The Air Reduction Chem Co has been licensed to produce a polyvinyl alcohol fiber now being made in Japan. Several firms are preparing to produce polypropylene fibers.

Nylon (both 6 and 6.6) and rayon are competing for the major share of the tire cord market. While research on both nylon and rayon continues in an effort to improve their competitive position in this field, polyvinyl alcohol cord tires are already being made in Japan, and polyester yarns are being evaluated in this country for the same purpose.

Glass fibers treated with reactive water-soluble substituted polysiloxanes are said to be capable of being dyed with a variety of dyestuffs, including pigments.

The finishing of cotton continues to be an outlet for various textile chemcals, particularly for crease-resistant or "wash-and-wear" finishes. Great interest is shown in cross-linking treatments while the cellulose is in the swollen state, a reaction which is said to improve the wet as opposed to the dry crease recovery.

A method to impart permanent creases in all-wool garments (a modified Si-Ro-Set process) is now in commercial use in this count' , it is said.

Production of nonwovens is on the increase. The future of these materials for apparel use appears to lie in the ability of the chemical companies to develop low-cost binding materials which will provide flexibility and solvent- and weather-resistant properties equivalent to those of woven materials.

Fungicides and Bactericides: Their Applications and Uses

Yeager, C C, *Can Textile J 76, 42-6, Dec 25, 1959*

The author first reviews briefly the application of fungicides to textiles during World War II, a period when the need for fungicidal protection became very pressing and "Government procurements went into high gear." Improper application of the products used, together with ineffectiveness of the treatments and toxic effects on the personnel in the textile plants, resulted in many complaints.

Since the end of the war, the chemical industry has had time to conduct extensive research work on new fungicides and the reformulation of old ones.

Before a biocide can be considered completely satisfactory for use as a textile finish, the author says, it must have the following characteristics:

Good stability. This is determined by its resistance to heat, light, u v rays, and oxidizing agents.

High efficacy. The efficacy may be either biostatic (preventing the growth of fungi or bacteria) or biocidal (destroying the organisms before they can damage the fabric or create other problems).

Low toxicity. The product must be nontoxic or of an extremely low order of toxicity.

Inoffensive odor. It must not impart an unpleasant odor, particularly to wearing apparel.

No color change. It must not discolor the textile material.

Good hand. It should not significantly change the hand of the fabric, especially if it is to be used in clothing. A harsh hand must be avoided.

No chemical effects on the fabrics. The biocide must not affect the tensile strength.

A table of 14 of the most common fungicides is given, with the characteristics of each in regard to the above seven factors.

The author lists some of the advantages to the manufacturer and subsequently the consumer that result when fungicides and bactericides are used in textile treatments: the life of the fabric is prolonged, offensive odors are avoided, a cleaner and more sanitary fabric is obtained, wear resistance is improved, and biological staining is prevented.

A long list of articles is given which can be improved by fungicides. This list includes tents and awnings, fire hose, shoe liners, hosiery, bath mats, upholstery materials, etc.

The author cautions all textile manufacturers to deal only with legitimate chemical suppliers and to insist that any fungicide be tested by "honest laboratories" before being adopted.

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Manufacture, Performance Characteristics of Acrilan Carpet

Chemstrand Corp, *Can Textile J 76, 69-70, Dec 11, 1959*

Acrilan carpet, which is being manufactured by tufting, weaving and knitting processes, has achieved a sales success unprecedented in the industry, the authors state. Its performance characteristics include excellent resilience and crush resistance; excellent stain resistance and ease of spot removal; good soil resistance and cleanability; and good wear-life durability (at least equal to wool, and in most cases better). In addition, it is mothproof, mildew-resistant, and non-allergenic.

The Acrilan carpet fiber does not compress as much as similar fibers of nylon, viscose, or a good carpet wool blend, according to laboratory tests, and when the compressional force is removed, it recovers more than these other fibers.

Because of its easy dyeability, Chemstrand's acrylic carpet fiber can be dyed in either stock or yarn form in a wide range of colors which have superior colorfastness to sunlight, gas fading, ozone fading, vigorous cleanings and stain removal, according to the manufacturers.

The new fiber has good affinity for at least seven classes of dyestuffs, all of which can be applied by methods which are essentially conventional. Of these dyes, the basic colors are of most interest to the carpet manufacturers because of their ease of application and excellent fastness properties. In cases where basic dyes are unsuitable, disperse, chrome or naphthol dyes can be used.

Execpt for minor modifications, the normal finishing procedures used for wool carpet can be used for Acrilan carpet.

The trademark "Acrilan Carpet" can be applied only to carpets made by mills which have signed a licensing agreement to meet quality standards set and maintained by the Chemstrand Corp.

Polyvinyl Alcohol Fiber Could Challenge High-performance Synthetics

Anon, *Man-made Textiles 36, 54-6, Nov, 1959*

Vinylon, Japan's polyvinyl alcohol fiber, is claimed to have much the same properties as the more expensive polyamides. It is said to be the least expensive of the synthetic fibers.

The starting material for Vinylon is acetylene, which is converted to vinyl acetate, polymerized, and hydrolyzed to polyvinyl alcohol. The spinning of the fibers is described. The freshly spun fibers are stabilized by a heat treatment and are insolubilized by treatment with aldehydes.

The insolubilized fiber has a density of 1.26, slightly higher than nylon. It is strongly resistant to alkalis, and is unaffected by 30% sulfuric acid or 12% hydrochloric acid at room temperature but is partially dissolved on boiling. Its resistance to acids and alkalis makes it particularly suitable for chemical filters and industrial clothing.

Vinylon has an outstanding resistance to light. The fiber shrinks slightly in boiling water but will stand ordinary household laundering and drycleaning. It is unaffected by sea water. It has a high dry and wet tenacity, and a high resistance to abrasion. Various other properties are listed in tabular form.

The author describes the sizing of Vinylon warps, but does not mention the dyeing properties of the fiber.

Vinylon fabrics are said to be warmer to the touch than those of spun viscose rayon and to be 20 percent lighter than cotton. Untreated fabrics are standing up well in use as awnings and tarpaulins, the author states, while for wearing apparel, Vinylon has a soft and comfortable hand and is being used for underwear, both woven and knitted, and for socks.

The author comments: "Why this fiber with its outstanding properties is confined to Japan is difficult to understand. It is certainly not due to its chemistry or to any processing difficulties. So far, it has been produced substantially as a staple and comparisons have usually been made with cotton. But it has a warmth and touch similar to that of wool, and it can be supplied for certain purposes with varying degrees of crimp. It would be a mistake to regard it only as a substitute for cotton, but its scope cannot be assessed until further information is available of its possibilities in continuous filament form which would allow of comparisons with filament nylon and Terylene."

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Wool Dyeing by Solvent-assisted Processes

Beal, W, Dickinson, K and Bellhouse, E, *Dyer 122, 662, Nov 20, 1959*

It has been known for some years that the rate of absorption of dyes on wool is affected by the presence of an organic solvent. Peters and Stevens showed that very good exhaustion of the dyebath could be obtained in a relatively short time from solvent/water dyebaths, and that this occurred at temperatures as low as 60°C. The authors therefore decided to see whether these ideas could be translated into a commercially satisfactory method of dyeing.

The ideal solvent should be cheap, have little odor, and be nontoxic. It should also have low water solubility and be a good solvent for most wool dyes, but it should not adversely affect the wool fiber. Over 200 such compounds were examined by the authors, and for many purposes benzyl alcohol was found ideal.

Of the many wool dyes which have been found to be satisfactory for use by this method, the neutral-dyeing premetallized dyes deserve special mention. Most acid milling dyes of the Polar type are also satisfactory.

Two dyeing methods are suggested: 1) dyeing at or near the boil for a short time; 2) dyeing at a relatively low temperature for a moderate length of time.

Laboratory tests indicated that the important factor in this system of dyeing is the percentage of benzyl alcohol in the dye liquor, and that there is a minimum figure at which fully developed dyeings are obtained. Using method #2, the best temperature was found to be 80°C, and the best liquor:goods ratio 10-20:1. It is suggested that the cost of the solvent might be reduced by using the dye liquor over again.

The advantages claimed for the new dyeing method include a saving of time, steam and water, slightly brighter shades, and better condition of the dyed material. The principal disadvantage is the additional cost of the solvent.

General Calendar

AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY
Mar 2, Apr 6, May 4, June 1 (Della Robbia Room, Hotel Vanderbilt, New York, NY)

AMERICAN COTTON MANUFACTURERS INSTITUTE
April 7-9 (11th Annual Meeting, Americana Hotel, Bal Harbour, Miami Beach, Fla); Mar 23-25 (12th Annual Meeting, Fontainebleau Hotel, Miami Beach, Fla)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
Mar 31-Apr 1 (3rd Annual Textile Engineering Conference, North Carolina State College, Raleigh, NC)

AMERICAN TEXTILE MACHINERY ASSOCIATION
May 23-27, 1960 (American Textile Machinery Exhibition, Auditorium, Atlantic City, NJ)

FEDERATION OF BRITISH INDUSTRIES
June 10-26 (British Exhibition of Industry, Technology, Science and Culture—Coliseum, New York, NY)

FIBER SOCIETY
Mar 10-11 (Spring Meeting, Roosevelt Hotel, New Orleans, La)

INTERNATIONAL TEXTILE MACHINERY EXPOSITION
1962 (3rd Exposition, Hanover, Germany)

INTER-SOCIETY COLOR COUNCIL
April 11-12, 1960 (29th Annual Meeting—Philadelphia Museum College of Art, Philadelphia, Pa)

NATIONAL COTTON COUNCIL
Sept 28-20 (9th Chemical Finishing Conference, Statler Hotel, Washington, DC)

PHI PSI FRATERNITY
April 28-30 (57th Annual Convention, Hotel Roosevelt, New York, NY)

SOUTHERN TEXTILE EXPOSITION
Oct 3-7 (Greenville, SC)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION
Mar 15, Apr 12 (Luncheon meetings, Hotel Roosevelt, New York, NY); May 11-13 (Spring Outing, Shawnee Inn, Shawnee-on-Delaware, Pa); June 14, Sept 13, Oct 11, Dec 8 (Hotel Roosevelt, New York, NY)

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, DELAWARE VALLEY SECTION
Mar 26 (3rd Philadelphia Conference of the Graphic Arts Industry—Benjamin Franklin Hotel, Philadelphia, Pa)

TEXTILE RESEARCH INSTITUTE
March 24-25, 1960 (30th Annual Meeting, Hotel Commodore, New York, NY)

WORLD CONGRESS FOR MAN-MADE FIBERS
May 15-18, 1962 (2nd World Congress, London, England)

Tear sheets of articles which have appeared in AMERICAN DYESTUFF REPORTER since July, 1956 are available in limited quantities. (Consult year-end indexes for list of titles). These may be obtained by sending a stamped, self-addressed envelope along with a request for the specific articles. Write TEAR SHEETS, American Dyestuff Reporter, 44 East 23rd St, New York 10, NY.

Proceedings of the
American Association of Textile Chemists and Colorists

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February 22, 1960 No. 4

38th National Convention———

NEW DEVELOPMENTS IN EVALUATING "WASH-AND-WEAR" PERFORMANCE*

JAMES R BERCAW

Textile Fibers Department

E I duPont de Nemours & Co, Inc

The "built-in wash-and-wear" performance of fabrics made from hydrophobic, thermoplastic fiber blends with cotton has reached a level of customer acceptance such that additional advances must come through subtle, incremental improvements in blends, construction and finishing, or through advent of a new fiber. Incremental improvements can be obtained, for example, through substituting rayon for cotton as a blending fiber with Dacron polyester fiber. Such improvements require the investigation of a large number of variables, and require sharper methods for assessing progress.

As a result, techniques have been developed for making and testing optimum small-scale fabric samples, which reliably predict "wash-and-wear" performance of their broad-woven analogs. A more fundamental problem, that of objectively measuring fabric wrinkles, has been solved by a new application of an established principle involving low-angle light projection. A slit of high-intensity light when cast onto a fabric gives an exaggerated contour line of the fabric surface. This line can be analyzed manually or electronically to give an index of fabric wrinkling which is in excellent accord with subjective evaluations. It also has other applications, such as determining the ability of coloration and surface texture to mask fabric wrinkles.

INTRODUCTION

IT seems rather strange that the same people who enjoy the varieties of nature, such as mountains, valleys, hills and rivers, do at the same time prefer their apparel to look monotonously flat and smooth. This apparent inconsistency in human psychology is one reason for the tremendous success of "wash-and-wear" fabrics, as witness the six-billion-dollar retail value (*1*) predicted for 1959. The other driving force in the success of this new concept is the "ease-of-care" property which has lifted a good share of the housewife's weary burden in the home laundry.

All this was started nearly seven years ago, as you know, by the advent of the hydrophobic-thermoplastic fibers. In the short period which has followed, "wash-and-wear" fabrics have progressed from a laboratory and sales counter curiosity to take an accepted place in nearly every American household. In fact, a recent article in a trade journal stated that "wash-and-wear" is an "assumed property" in today's consumer's mind. However, consumers have been led to expect dramatic improvements in "wash-and-wear" performance, and continued research efforts along these lines are a mark of progress and healthy optimism. These improvements will come through two routes: a) incremental advances in fabric and finishing technology, and b) new fiber developments. The realization of incremental improvements requires the investigation of a large number of variables, as well as an adequate means for reproducibly measuring the improvements. In the final analysis, most research problems, whether they involve nuclear physics, launching of space satellites, or improved fabric finishing, are reduced to the development of meaningful measuring techniques. It is the purpose of this paper to describe some of our recent work for improving "wash-and-wear" evaluation techniques, and to review some routes to incremental improvements in fabric performance.

EXPERIMENTAL AND DISCUSSION

In his quest for improved "wash-and-wear" performance, the textile technologist is not limited in the number of variables at his disposal. Some of the variables known to have an effect on the behavior of a fabric during laundering and during wear are listed in Table I. Within a given range of practical, saleable fabrics, a fairly wide range of variability in fibers, yarns, and fabrics can be tolerated. This can lead to a tremendous task of testing and evaluating. To add to the complexity, neither the "wash-and-wear" evaluation methods nor standards have been frozen to the point where they are acceptable to all concerned, although the AATCC Wash-and Wear Committee is mak-

TABLE I

"Wash-and-wear" variables: Dacron polyester fiber and cellulosic blends

A) Fibers
  1) Type
    Dacron and cotton
    Dacron and rayon
  2) Dpf
    1.0-3.0
  3) Blend ratio
    80/20—20/80
B) Yarns
  1) Count
    35/1—60/1
  2) Twist
    tpi and direction
C) Fabrics
  1) Construction and weave
  2) Finishing
    Sequence
    Range
  3) Coloration
    Prints, yarn dyes, piece dyes

*Presented on October 8, 1959 during the 38th National Convention, held in Washington, DC.

ing concerted advances toward this goal. In addition to the items in Table I, one can list the unintentional errors and variabilities which arise in processing and evaluating fabrics due to non-uniformities of equipment, procedures, and products. All of these things can plague a systematic investigation aimed at improved "wash-and-wear" performance.

The relationship of some of the above variables to "wash-and-wear" performance is shown in Table II (*2*). In this table factors favoring improved "wash-and-wear" performance appear at the top of each column, while those which are less favorable appear farther down. In Column 1 are listed the well-known effects of the standard laundering procedures (*3*) on "wash-and-wear." The outstanding performance of the machine wash-tumble dry (No. 3 in Col 1) procedure is due to more rapid recovery of thermoplastic fibers at elevated temperatures. This is reflected in the relative performance of the fibers and blends shown in Column 2, where the excellent recovery of Dacron polyester fiber is very much in evidence. The Table also illustrates the advantages in maintaining a high concentration of Dacron, or Orlon acrylic fiber in blends to get the best results. In addition, the advantages of rayon over cotton as a blending component with the polyfibers is shown. This will be covered in more detail later in the paper. Other well-known routes to improved "wash-and-wear" performance, such as increasing yarn mobility through the use of "looser" constructions (knits, basket weave) and masking of wrinkling through the use of coloration effects (*4*), are effective but limited by the seasonal and end-use demands of fabric design and styling.

The relationships in Table II are only approximations, but the differences in performance levels are real. This table illustrates the large range of variables and variability which face the textile technologist in his search for improved "wash-and-wear" performance, and methods of evaluation.

TABLE II

Some factors affecting "wash-and-wear" performance

Direction for improved "wash-and-wear" performance	*1 Laundry procedure*	*2 Fiber type*
↑	Machine wash Tumble dry (No. 3)	100% Dacron polyester fiber
		75/25 Dacron and rayon
	Hand wash Drip dry (No. 1)	50/50 Dacron and Orlon acrylic fiber
		65/35 Dacron and rayon
	Machine wash (no spin)—Drip dry (No. 2)	100% Orlon
		65/35 Dacron and cotton
	Machine wash Line dry (No. 4)	80/20 Orlon and rayon
		Resin-treated cotton
		Resin-treated rayon
		Wool
		Rayon
		Cotton

SMALL SAMPLE TECHNIQUES ——The first step in analyzing any large and complicated system is a systematic investigation of the variables using samples which are representative of the system. To accomplish this, we make extensive use of experimental design and statistical analysis. However, this modern approach is no better than the reliability of the test samples which make up the experimental design and the methods used for measuring responses. To carry out "wash-and-wear" research more effectively and economically, we initiated a program to define the minimum practical fabric size which could be prepared and tested to give correlation with broad woven and finished counterparts.

In our earlier work, discrepancies had been noted between values obtained on standard two foot by three foot "wash-and-wear" test swatches and values obtained for shirts made from these same fabrics These discrepancies showed up primarily in the "automatic wash-and-wear" method (No. 3) of laundering. It was found that the tumbling action of the dryer caused fabric swatches to roll into bundles rather than allowing them to billow as garments do. This resulted in heat or dryer wrinkles marring the surface of the swatches while leaving analogous garments with a better appearance. Therefore, a technique known as the "shirt-back method" was developed to eliminate this discrepancy. In this method, a swatch of fabric is fastened with sewing or snap fasteners into the back of a shirt from which the back panel has been removed. The shirt is then laundered by any method desired and the back panel rated or measured for wash wrinkles. Excellent correlation between shirt backs and full shirts has been found in a broad range of fabrics. This technique serves an additional advantage in that small test samples can, in this way, be evaluated for wear wrinkling.

The next step was to establish the minimum-size swatch which, when used as a shirt back, could reliably predict fabric wash performance. This was accomplished by cutting a series of rectangles and squares of varying dimensions and fabric make-up for comparison with their full-size analogs in shirt-back wash tests. The results of this experiment showed that the minimum practical fabric dimension giving good correlation was a rectangular strip six inches wide and about thirty inches long. The use of these six-inch-wide panels sewn in shirt backs has the added advantage that four panels of alternating test and control fabrics can be attached to each shirt back for direct comparisons. These narrow samples must be sewn to the shirt body with a loose seam or snap fasteners to eliminate wrinkles or distortions induced by seam puckering during tumble drying.

Having established the utility of narrow fabric samples in predicting "wash-and-wear" performance, the final phase remained to demonstrate, in the interest of research efficiency (and sometimes necessity in the case of scarce fibers), that narrow samples of this nature could be woven and finished in such a way as to replicate precisely their broad-woven analogs. This was carried out as a part of a statistically designed program involving twenty-seven fabrics to evaluate the effect of fiber blend, yarn, and fabric variables on "wash-and-wear" performance of shirting fabrics. The obvious routes to miniature fabric samples were: a) narrow-woven fabrics (seven-inch width), and b) filling band fabrics. As a result, the twenty-seven different yarns mentioned before were woven into control fabrics forty-five inches wide, into narrow test fabrics seven inches wide, and as filling bands in a common spun yarn warp. These three

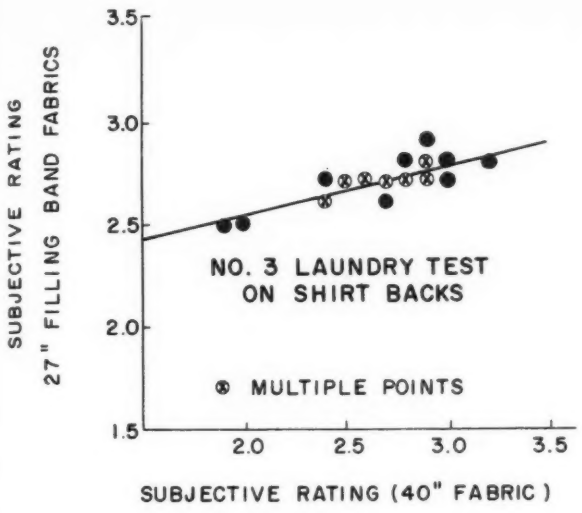


Figure 1
"Wash-wear" test correlation—27" filling band fabrics vs 40" fabrics

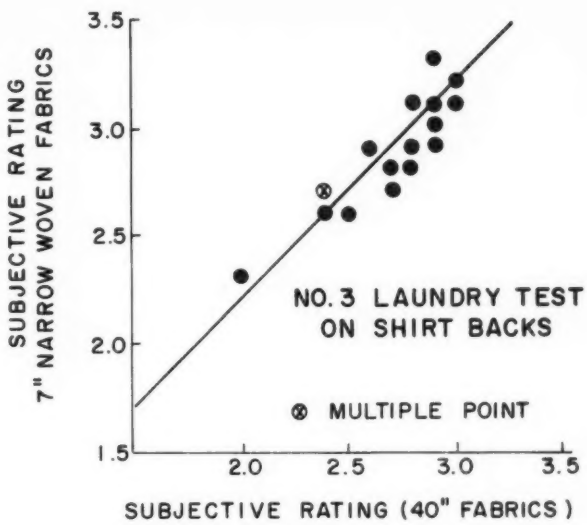


Figure 2
"Wash-wear" test correlation—7" narrow woven fabrics vs 40" fabrics

sets of fabrics were finished in tandem with false selvages being attached to the narrow-woven fabric. Results are shown in Figures 1 and 2. Figure 1 compares twenty-seven-inch filling band fabrics against the corresponding broad-woven fabrics, both evaluated subjectively in shirt backs. The coordinants are marked in the standard subjective rating units, and data refer to machine-wash, tumble-dried samples.

Figure 1 illustrates a case where excellent linearity of data is obtained and where the average difference of each point from a regression line is remarkably low. However, because of a narrow spread of data (0.3 rating units) for the filling band fabrics throughout the range of variables, the predictability (from using filling band fabrics to forecast "wash-and-wear" performance) is practically zero. On the other hand, we see in Figure 2 shirt-back data for homogeneous narrow-woven fabrics versus their broad-woven counterparts. In this case, there is sufficient spread (1.0 unit) and correlation between test and control data to give a system capable of good prediction. Narrow-woven fabrics have also been used to satisfactorily predict "wash-and-wear" performance of spun tropical blend fabrics, and lightweight filament taffeta fabrics.

In summary, a combination of narrow-fabric techniques (using the same yarn in both warp and filling directions) and experimental design can be used as effective tools to screen fiber, yarn, and fabric variables for end-use wash-wrinkling performance. The narrow fabric shirt-back technique has the advantage of placing test and control fabrics in a unit wherein samples are subjected to identical testing conditions. It also places test and control fabrics in juxtaposition for easier subjective comparison. The experimental design research approach, to study variables which affect "wash-and-wear," is outside the scope of this paper. However, it did permit evaluation of singular and interactive effects of a number of variables, which by any other means of analysis would have been highly impractical.

MEASUREMENT OF FABRIC WRINKLES——We mentioned earlier that progress in scientific investigations is strongly dependent on the development of proper methods for measuring various phenomena. This point was emphasized at the 1958 AATCC Convention when Kaswell stated the need for an objective test method in which wrinkles could be measured quantitatively in a prescribed manner independent of observer's opinions (5). We realize that the eyes and mind of the consumer are the ultimate judge in assessing appearance of fabrics and garments. Nevertheless, to measure progress in fabric research and to assure interlocation understanding, it is necessary that proper wrinkling standards and objective measurements be developed and adopted as soon as possible. We need not be reluctant about striving for these goals, even though widely varying end-use requirements will in many cases demand a broad interpretation of "acceptability" and "non-acceptability".

The need for objective measurements becomes all the more urgent as textile technologists strive for the fabric which performs perfectly. As fabrics improve from moderately

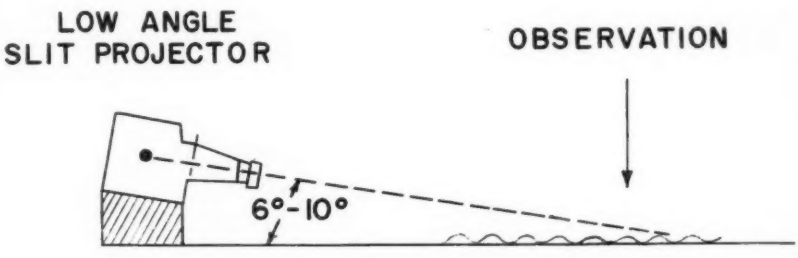


Figure 3
Schematic diagram: low-angle projection (LAP)

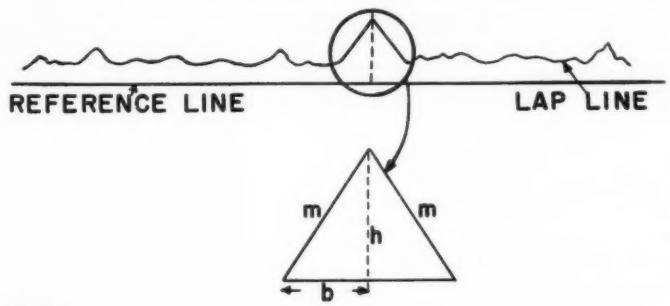
wrinkled to completely flat, the differences in appearance become more and more subtle and difficult to detect consistently on the basis of subjective evaluations. This is illustrated in our efforts to develop "automatic wash-and-wear" shirtings. This descriptive phrase refers to fabrics which, after repeated automatic washings and tumble drying, need little or no ironing, and retain their neat appearance (including pressed-in crease and pleat retention) after laundering and during wear. Of course, they must also meet the other normal requirements, such as color, surface and dimensional stability, durability, and hand. It was apparent that fabrics of 65 percent Dacron and 35 percent cotton, which had become the "wash-and-wear" bench mark of the trade, on occasion needed a touch-up ironing after the best of home laundering conditions. Therefore, they would probably not meet the "automatic wash-and-wear" requirements of a majority of housewives who do not possess optimum equipment or take time to perform optimum procedures in laundering. It is a fact, that lightweight shirting fabrics of Dacron and cotton can develop a fine fabric mussing during the tumble-drying operation, probably as a result of the frictional properties of cotton. This was overcome by blending rayon with Dacron polyester fiber and thereby gaining an improvement over Dacron and cotton in No. 3 "wash-and-wear" performance of 0.5 to 0.8 unit on our particular rating scale. However, there are other factors associated with the use of rayon in dress shirtings which must be worked out before wide usage in these type fabrics is anticipated. Nevertheless, it is the above type of incremental improvement which made the development of a satisfactory means for objective measurement of wrinkles a necessity.

LOW-ANGLE PROJECTION TECHNIQUES——We mentioned earlier an analogy between mountains and valleys and fabric wrinkles. After investigating a number of principles for measuring the nonplanarity of fabric surfaces, the most obvious and clear-cut route to a solution came through a consideration of topography and contour lines. This involved application of an old technique, that of casting low-angle light rays onto a surface and measuring surface irregularities from the resulting exaggerated shadows. This technique has been used elsewhere to measure surface smoothness of metals

Figure 4
Normal-angle (30°) lighting

Figure 5
Low-angle (7°) lighting

Figure 6
Low-angle projection lines



ASSUMPTIONS:

- WRINKLE CONTOURS ARE A SERIES OF ISOSCELES TRIANGLES
- WRINKLE SEVERITY (WS) = NON PLANARITY X NO. WRINKLES (N)
- NON PLANARITY $\propto$ WRINKLE SLOPES (m)
- WRINKLE INDEX (WI) = 1/WS

THEN

$$WS = \Sigma\, mN = \Sigma\, (\bar{h}/b)\, N = \Sigma\, \bar{h}^2 N/AREA$$

$$WI = 1/WS = \Sigma\, A/\bar{h}^2 N$$

Figure 7
Algebraic analysis of LAP lines

and crystals, to determine the sharpness of creases and pleats in apparel fabrics (6), and to define contours of the human body for the proper fitting of safety equipment, such as crash helmets. Figure 3 represents the simplest form of low-angle projection (LAP) for wrinkle evaluation. In this case, fine parallel grid lines are cast onto a wrinkled fabric from a low-angle slide projector. The results are illustrated in Figures 4, 5, and 6. Figure 4 pictures a badly-wrinkled fabric taken under the normal 30° diffuse lighting conditions used to rate "wash-and-wear" performance in our laboratory. Figure 5 shows the same fabric taken under low-angle (7°) light which, as expected, brings out more detailed wrinkling in the test specimen. However, Figure 6 shows the same specimen exposed with LAP lines, which reveals in detail the contours of each wrinkle. It was this demonstration which convinced us that a graphic amplification of a fabric contour as shown in Figure 6 was a key step in the development of an impersonal quantitative measurement of fabric wrinkling. It was found that a series of low-angle projection photographic standards were considerably sharper aids to subjective evaluation of fabric wrinkling than were regular photographic standards. The reason for this turned out to be that photographic standards themselves were subject to interpretation by members of an evaluating panel since the standards were merely pictures of fabrics which were commonplace in everyday experience. On the other hand, the LAP standards were no longer associated with fabrics, by subjective evaluators, in that they were novel standards which formed an indelible picture in the mind of each evaluator. I suppose that this is related to the same psychological principle that makes people turn around twice to stare at a zebra.

To take advantage of the quantitative aspects of contour lines, an approach was taken (7) that the severity of wrinkling (WS) in a fabric is dependent upon the average slope of the wrinkles which is an index of fabric nonplanarity, and the wrinkle density or number of wrinkles in each examination zone. We then define "wrinkle index" (WI) as the reciprocal of wrinkle severity. Basic assumptions and mathematical relationships are shown in Figure 7. The final equation defines the wrinkle index (or freedom from wrinkles) of a fabric as being equal to the summation of contour line areas (A) of each wrinkle in the examination zone divided by the product of the average wrinkle height squared (h^2) times the number of wrinkles (N) appearing along the examination zone or contour line. In practice, 5 or 6 examination zones, each eight inches in length, are graphically analyzed and averaged to give WI values. A more elaborate extension of the LAP wrinkleometer is shown in Figure 8. This apparatus is arranged in such a way that a reference line is projected from a light source slit directly below the wrinkled fabric. Fabric samples are mounted on a traveling carrier (glass sled) which can be driven at a constant speed in forward and reverse directions. In this way, fabric samples when viewed from above (Figure 8) show a straight reference line and the amplified contour line. These lines can be analyzed in any of three ways: a) visually by using photographic LAP standards in Figure 9; b) photographically to obtain contour measurements for substitution in WI equation; or c) electronically. Since the standards shown in Figure 9 are

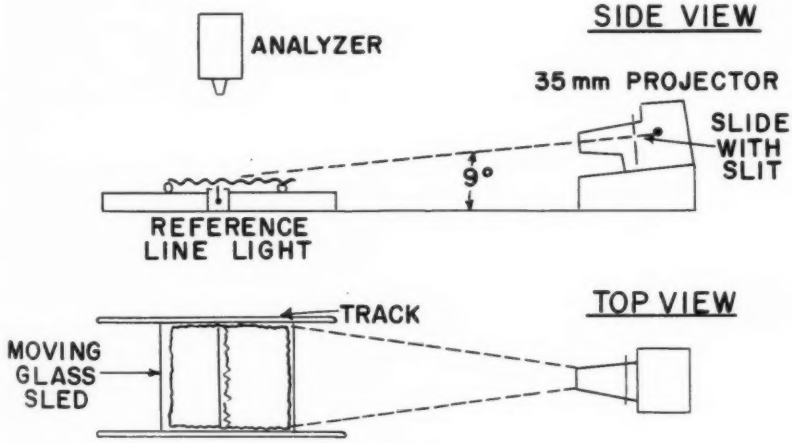
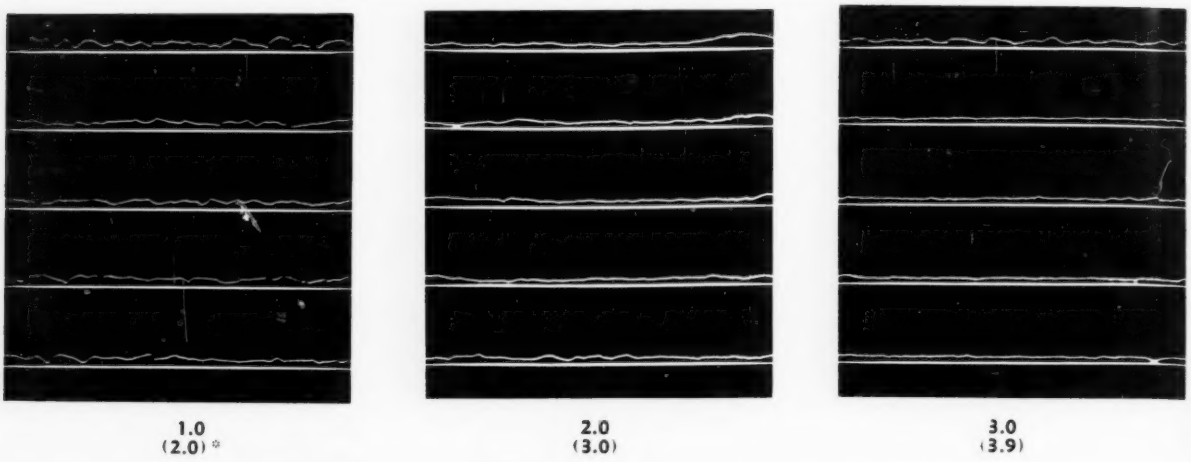
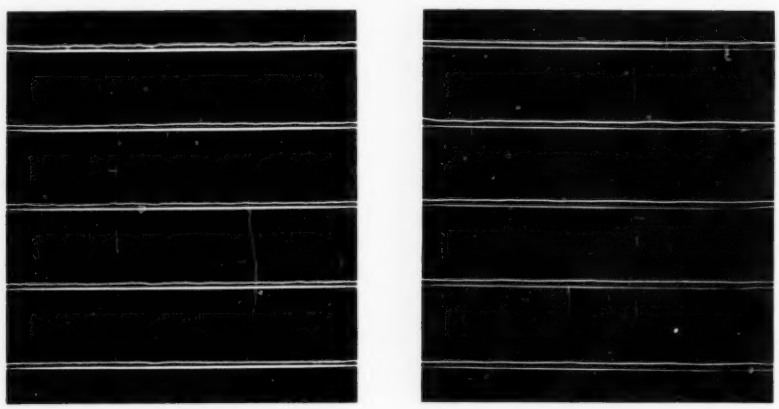


Figure 8
LAP wrinkleometer



1.0 (2.0) * 2.0 (3.0) 3.0 (3.9)



4.0 (4.6) 5.0 (5.0)

* Comparable ratings using Eastman photographic standards

Figure 9
LAP wrinkle standards

appreciably more severe than those used at some other locations, we have inserted in parentheses the ratings which the standard fabrics would have received if Eastman photographic standards had been used by a rating panel.

In Figure 10 are shown data which illustrate the correlation of Wrinkle Indices (figured from the empirical equation listed in Figure 7) with subjective ratings for the corresponding fabrics based on standard pictures of fabrics. Plotted on the abscissa is the subjective rating scale using photographic standards. The ordinate shows WI values which have been translated into the familiar 1-5 wrinkle ratings through use of the indicated equation. It is evident from examinining these data that the low-angle projection Wrinkle Indices correlate quite well over a broad range of subjective ratings on shirtings and can therefore be considered a highly promising objective tool for measuring the wrinkles in fabrics. Although the LAP apparatus has been demonstrated as a valuable evaluation device and is in an advanced stage of development, it has yet to undergo a considerable amount of testing to establish correlation with subjective evaluations over a broad range of fabric types. In addition, we are fully instrumenting the apparatus so it will give instantaneous readings on the 1-5 scale of performance.

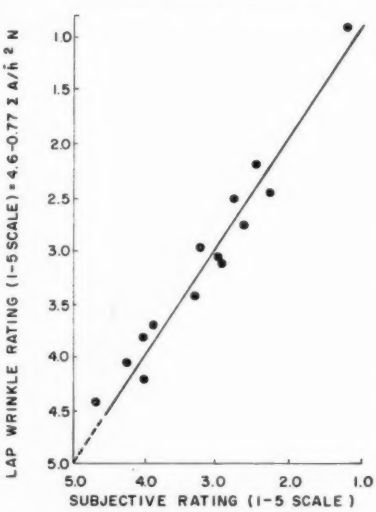


Figure 10
Correlation of LAP vs subjective rating system

Consideration of Figure 9 shows that the low-angle projection technique for measuring fabric wrinkles becomes especially valuable in the 3.0, 4.0 and 5.0 range of fabric performance where improvements are subtle but nonetheless difficult and important to achieve. We illustrate this further in Figure 11 where LAP photographs show how mussiness of shirting fabrics of Dacron and cotton can be overcome, as we mentioned

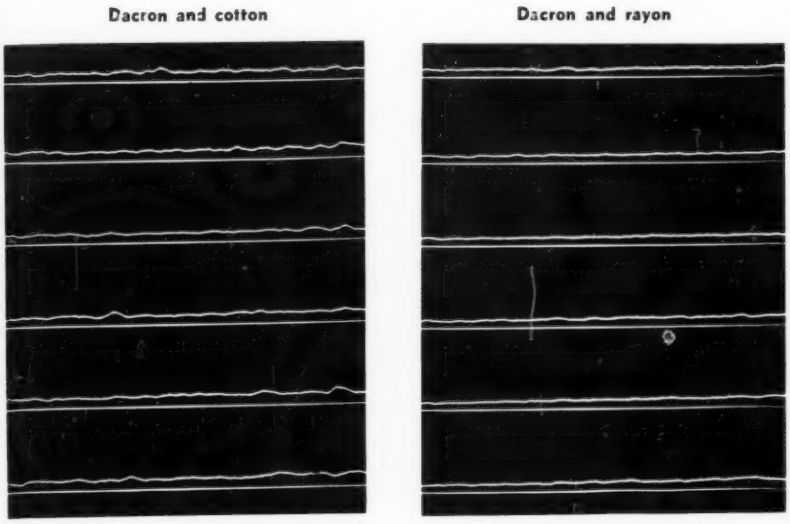


Figure 11
LAP comparison—Dacron and cotton vs Dacron and rayon (65/35 blends)

earlier, through substituting rayon as the cellulosic blend component. This would be difficult to show in fabric photographic standards. Figure 11 again illustrates the correlation between LAP measurements and subjective ratings for these two fabrics.

In summary, we can conclude that a technique has been developed and demonstrated which can measure fabric wrinkles objectively without disturbing the fabric in any way. The LAP technique has excellent resolving power and is quite capable of clearly detecting incremental improvements in fabrics of Dacron and rayon fabrics over Dacron and cotton. Because of high intensity of the light which is projected onto the fabric surface, wrinkles are not masked by fabric coloration or surface-texture effects. In fact, LAP evaluations of printed fabrics reveal the ability of prints to mask fabric wrinkles. The technique is simple and can be used to yield sharper and more discriminating subjective evaluations, or through algebraic analysis and instrumentation, it can give wrinkle ratings which correlate quite well wth those from subjective evalutions. In addition to wrinkle measurements, other testing applications of the LAP technique are being investigated.

We realize that the task of improving techniques for measuring and cataloging scientific phenomena is a never-ending one. We also recognize that the techniques and developments discussed in this paper must be refined, tested and correlated in greater depth and breadth to give us uncompromising confidence in their reliability and usefulness. When this is accomplished, these techniques will effect a tremendous saving in evaluation time and money, and the LAP instrument will minimize the hazards involved in assuming that three or four subjective raters can effectively represent a wide segment of the consumer population. It is our hope that some of the developments and ideas presented in this paper will encourage additional effort throughout our textile industry to supplement the fine work already undertaken by your organization.

ACKNOWLEDGMENTS

The information presented in this paper is based on work performed in the Chestnut Run Laboratories of the Du Pont Company. Special gratitude is expressed to W C Dodson Jr, F J Evans, G R Long, F S Looney, R T Stiehl, and many other members of the Textile Fibers Department for their help in preparing this paper.

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AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES
May 26-27 (Hotel Sheraton-Atlantic, New York, NY); May 26—Council Committees and Research Committees; May 27 (AM)—ECR, TCR; May 27 (PM)—Council

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Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); Sept 28-30, 1961 (Buffalo, NY); 1962 (Southern Region)

DELAWARE VALLEY SECTION
Mar 4 (Beck's-on-the-Boulevard, Philadelphia, Pa); Apr 22 (Ladies Night, Northeast Shrine, Rockledge, Pa); May 20 (Outing, North Hills CC, North Hills, Pa); Sept 16 (Reading, Pa); Nov 4, Dec 9 (Philadelphia, Pa)

HUDSON-MOHAWK SECTION
Mar 27 (Chelsea House, Tribes Hill, NY); May 20 (Ladies Night); June 24 (Annual Outing)

METROPOLITAN SECTION
Mar 18, Apr 22 (Kohler's Swiss Chalet, Rochelle Park, NJ); May 20 (Ladies Night—Swiss Chalet); June, 1960 (Outing)

MID-WEST SECTION
Apr 30 (Schroeder Hotel, Milwaukee, Wis); June 18 (Outing, Cerami's Island View Resort on Browns Lake, Burlington, Wis)

NIAGARA FRONTIER SECTION
Mar 4 (Joint meeting with Ontario Section, CATCC at St Catherines, Ont); Apr 22 (Buffalo, NY)

PACIFIC SOUTHWEST SECTION
Mar 18, May 13 (meetings); July 16 (picnic); Sept 24-25 (outing); Nov 18 (meeting); Dec 10 (dance)

PIEDMONT SECTION
Apr 2-3 (Hotel Robert E Lee, Winston-salem, NC); June 3-4 (Outing—Ocean Forest Hotel, Myrtle Beach, SC); Sept 23-24 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION
Mar 25 (Providence Engineering Soc); Apr 29 (Student Night); June 24 (Outing—Metacomet Country Club); Sept 23 (Management Night); Oct 28 (Providence Engineering Society); Dec 2 (Annual Meeting—Johnson's Hummocks)

SOUTH CENTRAL SECTION
May 13-14 (Outing—Riverside Hotel, Gatlinburg, Tenn); Sept 10, Dec 9 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION
Apr 16 (Ida Cason Callaway Gardens, Pine Mountain, Ga); June 10-12 (Outing—Radium Springs Lodge, Radium Springs, Ga); Sept 10, Dec 3 (Atlanta Athletic Club, Atlanta, Ga)

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In the organization of the material, there should be one or more introductory paragraphs setting forth the occasion, significance and main objectives of the paper and of the method of attack. This should be followed by the body of the presentation, either with discussions interspersed throughout this portion or with a collected section marked "DISCUSSION" after the main body of the paper. Finally, there may be a brief section at the end entitled "SUMMARY" or "CONCLUSIONS."

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38th National Convention———

DYEING AND FINISHING SPECIAL BLENDS OF ARNEL WITH ACRYLICS AND ARNEL WITH COTTON IN CIRCULAR KNIT APPLICATION

Part II

RALPH E LACY and JACK A DAYVAULT

Celanese Fibers Company

A Division of Celanese Corporation of America

(Continued from previous issue)

PRACTICAL ASPECT OF DYEING ARNEL/ORLON

EQUIPMENT——Tubular knit fabrics of this blend are preferably dyed on enclosed stainless-steel dye winches designed for synthetic knit fabrics. The elliptical or hump reel gives a good plaiting and shifting action which helps prevent tangles and crack marks. Overhead steam and a hot-water supply are useful in dyeing this blend. Reel speeds should be sufficiently fast to cause complete circulation of a full piece once every minute. The woolen-type dye winch with a round reel does not give the best results on these fabrics.

Submersion-type skein dyeing equipment commonly used for the high-bulk yarns can be used to skein dye high-bulk Arnel/Orlon yarns. Cascade-type skein-dyeing equipment should not be used since it produces a lean yarn with flat spots.

TABLE VII

Cationic dyes not recommended for Arnel/Orlon blends

Sevron Yellow GL
Basacryl Yellow 423
Genacryl Orange RL
Astrazon Orange R
CI Basic Violet 1
CI Basic Blue 9
Basacryl Blue Violet 507
Basacryl Blue 214
CI Basic Blue 6
Astrazon Olive Green BL
Basic Black PSR

DYEING——Reserve effect shades are made by dyeing the Orlon and reserving the Arnel. The Orlon is dyed with cationic dyes by conventional procedures recommended by the dye manufacturer. Cationic dyes are normally applied to 100% Orlon at a pH of 4.5-5.0 with 0.5-1.0% of a nonionic surfactant, 0.3% sodium acetate, and Glauber's salt or a quaternary-ammonium-type retarding agent. For dyeing reserve effects on this blend, the cationic dyes listed in Table VI have been found to be satisfactory. Cationic dyes listed in Table VII should not be used on this blend because of excessive staining of the Arnel. For reserve effects, cationic dye stains on the Arnel should be removed since they are fugitive to light. Cationic dye stains on Arnel can be removed by running the goods in a cold bath (75°-80°F) with 5% (owf) of a 5% sodium hypochlorite solution and 1% (owf) hydrochloric acid. The fabric is then given an antichlor with sodium bisulfite.

Union shades are dyed by the one-bath procedure given in Table V*. Selected neutral-dyeing cationic dyes which are marked with an asterisk in Table VI are used to dye the Orlon. Table VIII lists a few of the recommended disperse dyes for the Arnel. To promote levelness of pastel and

*See Part I.

TABLE VI

Cationic dyes for dyeing Orlon in Arnel/Orlon blends

Class I Dyes	*Class II Dyes*
CI Basic Yellow 11	Astrazon Yellow 5G
CI Basic Yellow 13	Genacryl Yellow 3G
*Sevron Yellow 3RL	*Sevron Orange L
*Basacryl Yellow 420	Sevron Orange CL
Astrazon Yellow 3G	Astrazon Orange G
Deorlene Brilliant Yellow 5GL	
Genacryl Yellow 5GL	Astrazon Red 6B
*CI Basic Orange 21	Genacryl Red 6B
Genacryl Orange R	Deorlene Red 3B
*Sevron Orange G	Astrazon Pink FG
	Sevron Red L
*CI Basic Red 14	*Sevron Red GL
Deorlene Brilliant Red R	CI Basic Violet 14
*Sevron Brilliant Red B	
Maxilon Red BL	CI Basic Green 4
Basacryl Red 729	CI Basic Green 1
*Genacryl Pink 3G	CI Basic Green 3
Sevron Blue BGL	
*CI Basic Blue 21	
*CI Basic Blue 22	
*Sevron Blue NF	
*Sevron Blue 5G	
*Sevron Blue 6G	
Deorlene Blue BR	
*Deorlene Blue 5G	
*Genacryl Blue 3G	
Maxilon Blue GLA	
Maxilon Blue RLA	

Note: Class I dyes generally have less staining on the Arnel and/or better fastness properties than Class II dyes.
* Neutral-dyeing cationic dyes for use in one-bath procedure.

TABLE VIII

Disperse dyes for dyeing Arnel

Class I Dyes

Yellows:	*Class II Dyes*
Lenra Yellow R	CI Disperse Orange 5
Interchem Acetate Yellow HDLF-40	CI Disperse Red 5
Latyl Yellow YL	*Eastman Blue GP
Eastone Yellow 2R-GLF	*CI Disperse Blue 7
CI Disperse Yellow 37	*CI Disperse Blue 1
Celliton Fast Yellow GGLL-CF	
Artisil Direct Yellow SCW	

Reds:

CI Disperse Red 35
Celliton Fast Red GNLF
Eastone Brill Fast Red 2B-GLF
Eastone Fast Pink B-GLF
Eastone Fast Pink 3B-GLF
Cibacete Red GFB
CI Disperse Red 43
Latyl Scarlet FS
Genacron Red B

Blues:

Eastman Fast Blue B-GLF
Latyl Brilliant Blue BG

Note: Class I dyes are those dyes selected for having the best fastness properties on Arnel. Class II dyes are of intermediate fastness, having special application for heavy shades. Other dyes for Arnel are listed in Celanese Technical Bulletin TD15A.
* Nongas-fast disperse blues require an inhibitor.

light union shades, 10% Glauber's salt can be added to the bath to retard the strike of the cationic dyes onto the Orlon. For medium and heavy shades on the Orlon, no retarding agent has been required. Quaternary-ammonium-type retarders have not been used in the one-bath procedure, since there is some indication they may cause instability of the dyebath.

To prevent "O" fading, 0.25% of an inhibitor, such as Conco Inhibitor FR, is added to all dyebaths containing disperse dyes after the shade has been matched. The inhibitor is diluted with hot dye liquor and added during the cooling cycle at 180°-190°F. The fabric is cooled on down to 160°F before rinsing. Where nongas-fast disperse blues have been used, more inhibitor is required, depending upon the amount of disperse blue used.

For cross-dyed effects it is more economical to dye the Orlon the heavier shade and dye the Arnel the lighter shade. With the exception of color combinations with black, cross-dyed shades are dyed by the one-bath procedure. Cross-dyed effects containing black and a color are made by dyeing Orlon black by conventional procedures with the less expensive acid-dyeing cationic dyes. The Arnel is subsequently dyed in a new bath.

Good whites can be obtained on this blend by bleaching with 3.0% Textone (sodium chlorite) and 3.0% oxalic acid (owf) for 45 minutes at 205°F. Textone bleaching assistants which suppress odor and fumes during bleaching can be used. To get optimum bulking, the fabric should be run another 45 minutes at a boil. After cooling slowly and rinsing, the fabric is given an antichlor with sodium bisulfite for odor removal. Where the brilliance of a fluorescent white is desired, a combination of 0.1-0.3% (owf) of a fluorescent brightener, such as Uvitex ERN, and 0.05-0.10% (owf) CI Fluorescent Brightener 55 with 1.0% acetic acid (owf) is used. The optical brighteners are applied at 205°-208°F in a new bath after the Textone bleaching and antichloring.

Union black shades are made by dyeing the Arnel a developed black with 4.0% Latyl Diazo Black B and 2.5% CI Azoic Coupling Component 18. Cationic dyes are used to top the Orlon onto shade during the development of the shade on the Arnel. The procedure for dyeing a union black shade is outlined in Table IX.

Although the Arnel helps minimize winch cracks or creases, as with all acrylic-containing fabrics, care should be exercised to cool the goods down slowly after dyeing to 160°F before rinsing.

TABLE IX
Dyeing union black shades on Arnel/Orlon blends

1) Run fabric in bath at 90°F with 0.5% of a nonionic surfactant such as Alkanol HCS for five to 10 minutes.
2) Mix 2.5% CI Azoic Coupling Component 18 with 5.0% Solox. Dissolve 0.65% caustic soda with 2.5% water. Stir the dissolved caustic into the naphthol mixture. Let the solution stand for five minutes. Dilute with hot water. (The solution should be clear greenish yellow liquid.)
3) Strain the naphthol solution into the dyebath. Run 10 minutes.
4) Add 3.0% acetic acid diluted with water to the dyebath. Run five minutes (pH 4.0-5.0). A fine milky-white precipitate is formed. Run 10 minutes.
5) Mix 4.0% Latyl Diazo Black B with 8.0% Compound 8S. Dilute with hot water. Strain. Add to dyebath. A purplish brown color results.
6) Heat to 208-212°F over 30 minutes. Run 90 minutes at 208-212°F.
7) Overflow rinse with warm water to 140°F. Then rinse well with cold water.
8) In a new bath diazotize with 5.0% sodium nitrite and 7.5% formic acid (conc). Run 30 minutes at 77-86°F. Raise to 140°F over 15 minutes. Run 15 minutes at 140°F. Rinse well.
9) In a new bath, complete development of Arnel and top the Orlon with:
   0.50% Sevron Blue 5G
   0.15% Sevron Brill Red B
   0.50% Igepon T
   1.00% monosodium phosphate
   2.00% disodium phosphate
10) Raise to 180°F over 30 minutes. Raise from 180°F to a boil over 30 minutes. Run 60 minutes and sample.
11) When on shade, cool by radiation to 160°F. Rinse overflow.
12) Scour 30 minutes at 160°F with 2.0% of a nonionic surfactant such as Alkanol HCS and 2.0% TSPP.

Note: All percentages based on weight of fabrics.

Fastness properties of Arnel/Orlon knit fabrics which have been properly dyed by these procedures will have 120°-140°F AATCC #IIA washfastness, 20-40 hours Fade-Ometer lightfastness, and crocking, perspiration, gas and "O" fading fastness.

Arnel/Orlon knit fabric can be rehandled without difficulty when required. When leveling or partial stripping of the shade is required, running the fabric for one to two hours at a boil with five to 10% sodium oleate soap flakes and 2.0% TSPP has been found effective. A soap scour plus a Textone strip is used when a clean fabric bottom is needed for redyeing into a different shade. Rehandled fabrics which are in extremely bad condition because of dyeing defects can be salvaged by dyeing into a union black shade.

FINISHING ——— Fabric hands ranging from a soft, full, cashmere hand to a firm, crisp, worsted hand can be obtained on fabrics made from this blend. Cationic softeners are the most-common-type finish applied to Arnel/Orlon knit fabrics. One-half to three percent (owf) of the softener is applied in the final rinse bath for 20 minutes at 120°F. Some of the more common softeners which have given good results on this blend are: Softex 596, Velvatol AF, Avitex NA, and Ceranine HC.

The alkyd resins, such as Methacrol FNH, at a 2-4% (owf) level can be padded on or applied by the exhaust method with a cationic softener to get a firmer worsted-type hand. Water repellency and variations in types of hand are obtained by use of the low-curing silicone emulsions. Silicones are available which can be applied exhaustively or by padding. For durable antistatic protection, Aston 108, a thermosetting polyelectrolyte resin, is satisfactory.

Prior to drying, excess moisture is removed by centrifuging the cooled fabric or by pad extraction. Conventional tubular knit good dryers are used. Dyed shades are dried at 225°-250°F. Whites are dried at 190°-200°F. Because of the thermal properties of the acrylics, drying temperatures should not exceed 300°F. The fabrics should not be overdried since this tends to harshen the hand.

Arnel/Orlon tubular knit fabrics are calendered on regular or tensionless steam calenders. Calender-roll pressure should be kept to a minimum, since excess roll pressure can cause glazing and reduce the fullness of the hand. Calendering with full steam, two or three double steam banks, at 16-24 yards per minute, depending upon fabric style, produces good results. Spreader settings are normally about an inch wider for a comparable finished width than those used on a similar 100% acrylic style. During drying and calendering, the fabrics should be run with minimum tensions being placed upon the fabric.

PRINTING———Arnel/Orlon jersey is roller printed with resin-bonded pigments. Good wash-, dry-clean- and lightfastness properties are obtained on these prints. Selections of the binder used will naturally influence the degree of wash- and crockfastness. Some work on screen printing Arnel/Orlon jersey with disperse colors has been done. With the Class A disperse colors, dye distribution favors the Arnel, giving a non-union appearance. The use of an accelerant increases the difference in dye distribution. For fine line prints, this difference in dye distribution would not be objectionable; however, where large areas are printed solid, the use of disperse dye prints would not be satisfactory. For disperse dyes, the print paste is made with 60 parts of Keltex sodium alginate (4% solution) and 40 parts water.

The prints are steamed 60 minutes at 10 psi pressure and then after-washed. Good fastness properties are obtained by this method when Class A disperse dyes are used.

PLEATING———Arnel/Orlon knit jersey can be durably pleated either by hand-pleating or machine-pleating techniques. Optimum pleating conditions for Arnel/Orlon jersey are:

1) For hand pleating, preset the pleats in a hand pleat form for five minutes at 15 psi. The fabric is then taken out of the form rolled onto a tube between tissue paper and autoclaved 15 minutes at 15 psi.
2) Where machine pleating is used, presetting is not necessary. The pleated fabric is autoclaved 15 minutes at 15 psi.

Fabrics pleated by this method can be hand washed-drip dried, machine washed on a synthetic setting and tumble dried, or drycleaned.

ARNEL/ACRILAN

High-bulk Arnel/Acrilan blends have potential in several knit and woven outerwear applications. The intrinsic affinity of Acrilan for disperse dyes requires that different principles be used in the dyeing of Arnel/Acrilan blends than those used for Arnel/Orlon. Both Arnel and Acrilan have good affinity for disperse dyes; however, the specificity of disperse dyes favors the Arnel in most instances. Table X shows the relative dye distribution ratio for a typical range of disperse dyes.

It can be seen from this table that, by selection, dye recipes can be developed which will give good union appearance in light-to-medium shades on intimate blends containing 50 to 60% Arnel. Heavy union shades may require filling in the Acrilan component with selected cationic dyes in the same dyebath. Burnthall (*8*) reports that addition of 3% urea to the bath will improve the exhaustion of the cationic dyes onto the Acrilan.

Cationic dyes which can be used for filling in the Acrilan include:

CI Basic Orange 21
Sevron Yellow 3RL
Astrazon Yellow 7GLL
CI Basic Red 14
Sevron Brill Red B
CI Basic Blue 22
Deorlene Blue 5G

The procedure outlined in Table XI can be used for union dyeing Arnel/Acrilan.

TABLE X
Distribution ratio of disperse dyes
Arnel vs Acrilan depth of shade

2% DYE—DYED AT 96°C FOR TWO HOURS

Dye	*Arnel*	*Acrilan*
Interchem Acetate Yellow HDLF-40	50	50 (sl duller)
CI Disperse Yellow 2	40	60 (redder)
Lenra Yellow R	65	35 (duller)
CI Disperse Red 35	60	40 (bluer and duller)
Eastone Red 2BGLF	65	35 (bluer)
Latyl Cerise B	60	40 (bluer and duller)
CI Disperse Red 11	55	45 (bluer)
Latyl Blue BG	70	30 (greener and duller)
Eastman Fast Blue BGLF	50	50 (greener and duller)
CI Disperse Blue 9	70	30 (greener)
CI Disperse Blue 19	65	35 (greener and duller)
CI Disperse Blue 16	55	45 (sl greener)

TABLE XI
Procedure for dyeing Arnel/Acrilan union shades

1) Set bath at 110°-120°F with 0.5% Igepon T.
2) Add dissolved disperse dyes.
3) Raise to a boil over 45 minutes.
4) Run 60-90 minutes at a *boil*.
5) If necessary make adds of cationic dyes at 180°F to fill in Acrilan. Add 3.0% urea.
6) When on shade cool slowly by radiation to 160°F before rinsing with warm water and then cold water.
7) Give heavy shades a light scour at 130°F.

Reserve effect shades are obtained by dyeing the Acrilan with either cationic dyes or acid and premetallized acid dyes. The methods of application recommended by The Chemstrand Corp for dyeing Acrilan are used. By dye selection, good reserves can be obtained on the Arnel. Cationic dyes tend to stain Arnel slightly more when dyeing Acrilan than when dyeing Orlon. This is due to the slower exhaust rate of the cationic dyes onto Acrilan as compared with Orlon. Cationic dye stains on the Arnel can be removed by using the aforementioned cold acid-chlorine strip.

Cross-dyed effects are limited to tone-on-tone effects and some black/color combinations which are dyed by a two-bath procedure.

Economical union blacks with good fastness properties can be dyed on this blend by a developed black procedure in which 3.0% CI Azoic Coupling Component 18 and 5.0% Latyl Diazo Black B are co-dyed. The fabric is subsequently hot diazotized and developed simultaneously with 5.0% sodium nitrite and 7.5% formic acid at 195°F for 45 minutes.

Textone bleaching is used for white shades. For fluorescent white shades, a combination of optical brighteners such as Uvitex ERN and CI Fluorescent Brightener 55 can be applied after Textone bleaching.

Precautions normally employed for the acrylics with respect to raising and lowering temperature during dyeing and the control of drying temperatures should also be observed for this blend.

Fastness properties for a range of shades on the Arnel/Acrilan blends will be slightly lower than those obtained on the Arnel/Orlon blend.

THE THIRD AND CONCLUDING PORTION OF THIS ARTICLE WILL APPEAR IN THE MARCH 7 ISSUE

REPORT OF THE STUDY COMMITTEE ON LONG-RANGE OBJECTIVES OF THE AATCC*

COMMITTEE

ERNEST R KASWELL, chairman
J ROBERT BONNAR
MILES A DAHLEN
CHARLES W DORN
MILTON HARRIS
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INTRODUCTION

AATCC is now nearly 40 years old. In keeping with its age it has undoubtedly reached a healthy maturity. It occupies a proper place as a leading technical society, and has attained a financial and professional stature in the eyes of the public, the government, the textile industry, and related industries. It seems reasonable to believe that it can maintain its present position of stability and reputation. However, there is danger that an association, having attained a position of distinction, will then rest on its past laurels, doing nothing further to advance those ideals for which it was founded, and to which a scientific society should subscribe. Indeed having accomplished most of its original aims, it can become stagnant rather than stable. Conceivably a society, having fulfilled its original objectives, might no longer be needed. To preclude such happening, it was deemed advisable and necessary for AATCC to review its present activities and functions, and to decide the future direction in which it should move.

At the request of the president of AATCC, a study committee was formed for the purpose of examining the present structure of our association, and to prepare recommendations pertinent to future long-range objectives. It will be appreciated that the acceptance or rejection of these recommendations can have a vital influence on the Association in years to come. Therefore the responsibility of this committee could not and were not taken lightly. Considerable amounts of inquiry, thought, and discussion with many effective and knowledgeable persons in AATCC and within the Committee were necessary in order for the concerted opinions presented herewith to represent our most critical and thoughtful judgment.

All Committee members do not necessarily unanimously agree with all of the comments and recommendations presented in this report. However, we believe it fair to state that it does represent the opinion of the majority in all cases.

It is important to state that our committee operated on the basis that its recommendations should be confined to major policy considerations with respect to those activities which AATCC should eliminate, modify, or initiate. The Committee felt that it was outside its province to propose procedural details of how our recommendations should be accomplished. This should be left to the "management" of the Association, ie, the president, executive secretary, the Executive Committee, or any other body created by the will and pleasure of the Council.

It may also properly be pointed out that it is not the intention of our committee to ask that radical or revolutionary changes be made overnight. The very nature of our title, "Study Committee on Long-Range Objectives" demands that caution be exercised with respect to our recommendations and their execution if accepted by the Council. However, if our efforts are to be worthwhile, those recommendations which the Council accepts should be implimented with all reasonable speed.

While the report is confined to basic statements of policy, it became necessary in certain instances to explain, clarify, and make recommendations as to modus operandi. Partly to obtain this objective, the report is divided into two parts: a) a concise summary of recommendations, and b) explanation and justification of the recommendations.

SUMMARY OF RECOMMENDATIONS

EXPANSION OF INTEREST TO ENCOMPASS ALL TEXTILE-LIKE MATERIALS———The ever-changing and rapid technological developments in materials have resulted in many replacements for traditional textile fibers, yarns and fabrics. Paper, plastics, nonwovens, foams, leather, metals, glass and the like are now being used in specific applications as either replacements or extensions of previously used conventional textile materials. AATCC should embrace those areas of "nontextile textiles" within its technical framework, and AATCC's experience in the use of testing techniques and methods should be adapted to the pressing needs of these new and related industries. Newer materials may replace previously used "classical" textiles, but AATCC test methods should and must be continued to be used to evaluate the new materials wherever their function is textile-like in nature. AATCC should take vigorous leadership in expanding its interest in these new materials, and should maintain close liaison with other professional and technical societies wherever common interest in such materials or test methods exists. It should not be inferred that AATCC should attempt to broaden its scope to the point where it becomes a "materials" technical association. Generally its interest should remain within the confines of the industries producing textiles or textile-like materials.

EXPANSION OF INTEREST TO ENCOMPASS THE COLOR TECHNOLOGY OF ALL MATERIALS———AATCC enjoys a singularly outstanding position in the US with respect to color and colorfastness. AATCC instruments and methods are used in color evaluation of a wide variety of materials, even including such products as metals or paints. The Association has gained stature through its role in the publication of the new *Colour Index* and various monographs. Because of AATCC's dominant position and reputation in the entire field of coloring of materials, this Committee recommends that AATCC broaden its base to accommodate all those interests which are concerned with the science and technology of color. AATCC should be in the forefront in its relations with other societies where common interests in color exist.

*Report accepted by Council at its January 22, 1960 meeting.

ESTABLISHMENT OF STANDARDS———The Committee believes that the Association should keep in step with the industry it serves as the interest of our industry focuses attention on end-use performance. Therefore, the committee recommends that AATCC make provisions for active participation with a voice of influence in standards being developed by other agencies which bear directly on the performance characteristics of all textile and textile-like products. Up to the present time, AATCC has subscribed to an active policy of developing test methods but has remained aloof from all activities concerning the creation of standards. It is not our recommendation that AATCC should develop "AATCC Standards" to accompany their test methods, but it is urged that AATCC assume vigorous voting representation in the establishment of standards by such worthy organizations as the Federal Government, American Standards Association, and the International Organization for Standardization.

PUBLICATIONS———The reputation and standing of most technical or scientific societies are reflected in their publications. AATCC may be an exception, lacking a journal over which it has full control, both editorially and financially. Considering such a journal, particularly as a medium of professional expression, but not overlooking the financial aspects as a potential source of revenue, the Committee recommends that AATCC fully utilize the medium of publications by assuming full responsibility for all of its publications.

It is specifically recommended that AATCC operate and publish its own technical journal. Consideration should be given to the ultimate appointment of a director of publications.

TECHNICAL AND SCIENTIFIC ACTIVITIES———The technical and scientific future of the Association requires long-range planning and objectivity. If the Association is to upgrade and maintain technical leadership of a quality that is nationally and internationally recognized and respected, it must provide facilities to insure that such leadership is maintained. Such assurance can best be realized through a competent and qualified technical staff with adequate finances for contracting specialized problems to highly qualified laboratories, but most important, engendering in the membership a continued enthusiasm for voluntary participation in a broad Research Committee structure of depth and breadth. It is the opinion of this long-range planning committee that the lifeblood of the Association is the Research Committee concept of operations to which a large group of AATCC members have dedicated their time and talents on a voluntary basis to accomplish the technical work of our Association. In order to strengthen this concept, the Research Committee functions should be maintained and expanded through more vigorous and active technical staff support. The National Headquarters staff organization should be broadened and upgraded to include personnel with a high degree of professional qualification in their respective technical fields.

Because of the recommended expansion of interest to encompass textile-like materials, it is further recommended that research committees be created, where necessary, to work with and have knowledge of such materials. In addition, the need may be evidenced for the creation of research committees which will represent the combined efforts of two or more specific committees having areas of common interest. Where necessary, such broad committees should maintain close and proper liason with other technical societies. Vigorous and effective technical leadership should be assumed by AATCC's technical director.

LABORATORY OPERATION———Our committee is of the opinion that the laboratory facilities of the Association are not parallel with the experience of societies of similar size and budgets as a means of rendering either economical or effective services to the technical committee and their members. The Committee recommends, therefore, that the laboratory at National Headquarters be discontinued *at the appropriate time,* and that emphasis be fully shifted to committee support, with outside laboratory facilities being employed on a contract basis in accordance with the specialized needs of AATCC committees as they arise. This is not a new concept, since in the past AATCC has commissioned other well-qualified research organizations to conduct technical or research work.

THE ENCOURAGEMENT OF RESEARCH———AATCC has a responsibility to its members, to industry, and to the public, to encourage scientific and technical activities. Such encouragement is manifested by the sponsorship of Sectional technical meetings, national conventions, and specifically, by such activities as the annual Intersectional Contest. It is recommended that such activities be continued and expanded where possible. Also, the creation of prizes as incentives in research, such as the Olney Medal Award, the American Dyestuff Reporter Award, and Harold C Chapin Award, should be encouraged. It is also recommended that consideration be given to the establishment of fellowships, scholarships, prizes or awards as may be deemed necessary and capable within the confines of AATCC's operations and its budget. This is particularly pertinent with respect to the creation of interest in the textile industry among students and young people.

COOPERATION WITH COLLEGES———It follows that AATCC should exercise its influence in the devolpment of the professional quality of its members. AATCC should cooperate with colleges, particularly textile schools, to aid in the upgrading of professional curricula.

THE RELATIONSHIP OF AATCC TO ITS MEMBERS———It is the opinion of this committee that AATCC is a technical and scientific society of people. As such, it has responsibility to its members as individuals. In keeping with the work of other professional societies, for example, the American Chemical Society, it is suggested that a committee be created to aid in the development of the professional character of its members. Such an activity would logically be related to the abovementioned cooperation with colleges and textile schools with reference to the upgrading of the educational curriculum. This in turn, would help the textile industry by turning out well-trained, qualified, effective, and knowledgeable persons.

PUBLIC RELATIONS———AATCC has no organized public relations policy or program. In the absence of such, it is handicapped in reaching those groups whose attention the Association should stimulate and capture. Among these are consumer interests, educational institutions, student groups, government agencies, trade organizations, and professional and scientific societies with which AATCC has a common bond, both in the United States and in other countries. Neither a program nor a means for implementing such contacts has

been formally established within the operating framework of the AATCC. The Committee recommends that the generally accepted media employed by professional societies, for example, the ACS, be utilized in the orderly dissemination of information. Ultimately, it is presumed that AATCC will need a full- or part-time director of information, and it is suggested that the common area of publication activities and the dissemination of information as a public relations function be explored by the Executive Committee.

CONSUMER RELATIONS——It is recognized that, based upon AATCC's position and reputation, the textile consumer may look to AATCC for guidance and assistance, particularly in this age wherein so many new fibers and textile and textile-like products are appearing on the market. To serve the consuming public better, and in keeping with the public relations concept suggested above, we recommend that a "Committee for Consumers' Interests" be established. Such a committee should work with those trade and industrial organizations actively interested in the consumer areas of our industry. It will be evident that a Consumer Interest Committee would be aided considerably by a well-conceived and operating information program about AATCC, textiles and colors. It is not the intention of our Long-Range Committee to recommend that AATCC change its emphasis to the point where it becomes an association primarily for the benefit of consumers. It is felt that other associations and organizations effectively cover such needs.

CREATION OF A MARKETING AND ECONOMICS COMMITTEE——The economic welfare of the members of the Association as related to the economic welfare of the textile industry should be of obvious significance. It is recommended that a Marketing and Economics Committee be established to engage in those studies which may aid both the members and the industry with respect to information concerning changing trends in the textile industry. This is particularly pertinent with respect to the areas of "nontextile textiles."

FINANCES——It is evident to the Committee that, if the objectives outlined here are to be attained over a "long-range" period of time, new sources of revenue as the result of this broadened program will probably be required. It is particularly pointed out that most professional and scientific societies derive a significant portion of their funds via their publications. In order for the Association fully to realize its financial potentiality, the Committee recommends that AATCC thoroughly review its properties, including publications, from the point of view of whether these properties are being utilized profitably on behalf of the membership to which they belong.

AATCC'S OBJECTIVES——Objects of the Asociation as given in the *1959 Technical Manual* are:

1) "To promote increase of knowledge of the application of dyes and chemicals in the Textile Industry.
2) "To encourage in any practical way research work on chemical processes and materials of importance to the Textile Industry.
3) "To establish for the members channels by which the interchange of professional knowledge among them may be increased".

In light of the discussion and recommendations presented in this report it is recommended that the objectives be restated as follows:

1) To provide technical leadership to the textile industries and related trades in respect to the properties imparted to textiles and textile like materials during dyeing and finishing.

2) To encourage in any practical way research on the improvement of the aesthetic and functional properties of textiles through the development of new chemical agents or new or improved application processes.

3) To establish for the members and for the industry the proper means of disseminating scientific and technical knowledge and to encourage the interchange of such knowledge.

It is believed that this restatement of objectives will more adequately describe the role which AATCC is actually endeavoring to fill, and also assist in reorienting the Association toward dealing with present day trends.

AATCC'S NAME——While the Committee believes that the interests of AATCC should be widened to include all materials which have textile usage, it is felt that the present name of our Association remains both adequate and proper. The fact that our name emphasizes both textiles and color appears completely compatible with the philosophies of AATCC operations discussed herein. The Committee recommends that no change be made in the name of the Association.

LOCATION OF NATIONAL HEADQUARTERS——The Study Committee on Location of National Headquarters has already recommended that headquarters remain at Lowell Technological Institute. That Committee further indicated that the matter of location would relate to the findings of this Study Committee on Long-Range Objectives. We concur with the Committee on Location and recommend that no change in location be contemplated until an apparent and compelling reason emerges. However, this does not mean that in the future a change in location might not be proper. Those actions which may result from this report, and other recommendations of those presently interested in AATCC, ie, the Council, the officers, and the Executive Committee should influence and ultimately intelligently govern a final decision as to the location of the National Headquarters.

CONCLUSION——It will be obvious that many of the 16 topics presented are interrelated. To make the best use of the *policy* recommendations submitted will require AATCC "management" to consider detailed means for executing those accepted or modified by the Council. It is hoped that this Long-Range Objectives Committee has provided an initial impetus to start AATCC on a dynamic future road.

EXPLANATION AND JUSTIFICATION OF RECOMMENDATIONS

EXPANSION OF INTEREST TO ENCOMPASS ALL TEXTILE-LIKE MATERIALS——In considering the role which the AATCC should be prepared to play in the future, this committee feels that, in addition to continuing the effective work which our Association has performed in the past, a new orientation is needed toward certain trends which are changing the pattern of needs for technical support in this area.

These trends, which we feel will assume even greater importance in the future, may be summarized as follows:

a) *The dimming of the definition of textile materials in terms of components and the shift to definition in terms of performance.* The increase in the number of available fibers, the flexibility of manufacturing equip-

ment to use any or all fibers, and the development of techniques to combine fibers in many different ways will lead to ever-increasing pressure to define materials in terms of performance. New materials are preempting markets held traditionally by other types of textile materials and even nontextile materials are moving into traditional textile fields.

b) *The increasing interrelatedness and interdependence from a technical standpoint of all levels in textile manufacturing, distribution and servicing.* All of the textile industries which traditionally have comprised the membership of AATCC are included in this movement toward technical integration—the fabric manufacturers, the finishers, the chemical manufacturers, the laundry and cleaning trades, the distributors, retailers and consumer groups. In a sense ours is becoming "one textile world", bound together into one common lot by the inescapable necessity of finding satisfactory solutions to common technical problems.

c) *The increasing dominance of the consumer in the textile field, "and the essentiality of meeting the consumer's demands" for protection on the textile materials she utilizes.* The consumer today holds in a new way the power of economic life and death over all of the preceding levels in the manufacturing-distributing process. The power of the consumer will continue to increase. Furthermore, it is becoming a recognized right of the consumer to be protected in terms of performance of what she buys.

It has been apparent that the AATCC needs to re-evaluate its purpose and mission in the changed pattern of our present-day "textile world", and to consider if it has the program and organization which will most effectively meet present needs. We need to provide more effective technical leadership in the coming years than we have in the past. We should take a broader view of the area the AATCC should cover, in terms both of products with which we concern ourselves and the functions we perform.

The growing complexity in construction and finishing of textiles is increasing the dimensions of the technical problems with which our industries have to deal. This situation should not lead to our concentrating our attention and energy simply upon the technical aspects of manufacturing and processing. Rather, this very complexity and the problems which it is creating draw in other elements of our industries which in the past have not been so deeply concerned with our internal technical problems. All segments of our "textile world" including distribution and consumers are concerned with our technical problems. and we must be able effectively to communicate with them and inform them properly on many aspects arising from the technology of textile dyeing and finishing.

Whether we recognize it or not, the AATCC is already directing a large part—probably a major part—of its present interests to working with problems arising from the three major trends listed above. Over half of our present technical committees appear to be engaged in interests which in greater or less measure are related to them.

Furthermore, because of the obvious need for some organization to provide technical leadership in this field, we either must move toward an enlarged program or leave it to some other organization to fill the void.

For us to leave to someone else to supply this leadership would, we feel, mean that AATCC had missed its opportunity to achieve its proper role in the textile industries and had failed to realize its historic destiny.

It is felt that the Association should give consideration to including within the scope of its interests, substitutes for textiles which are coming increasingly to take the place of textiles in consumer uses, and which are subject to the same type of use and service, including washing and drycleaning, as textiles themselves.

This would include, in addition to conventional textile materials, such things as nonwoven "fabrics"; paper used as a textile in fabricated items, such as clothing; paper used to form yarn and then woven into textile-like structures; battings used as interlinings, leather used as a textile material; synthetic foams used as textiles; synthetic foams deposited on or laminated to textiles; synthetic fur and fur-like textiles; foil laminates and depositions on textiles; coated fabrics when used in place of textiles in customary textile uses; films and extruded plastics when used in place of textiles in customary textile uses; and nontextile materials used as garment linings.

While at the moment the utility of these materials as textiles is only in the process of being established, it is felt that sooner or later they will be pushed more and more into full textile roles and the time will come when the standards which have been established for textiles will need to be made to apply to them as well. This may be necessary for no other reason than to avoid consumer dissatisfaction which may react unfavorably by association to textiles and the textile industries.

ESTABLISHMENT OF STANDARDS——We feel it is time the Association faced up to the matter of standards and the role which the Association should play in respect to them. It is realized that there is a great deal of hesitancy with respect to endorsing standards of performance, and properly so. However, the Committee feels that a move in the direction of endorsing standards must be taken by AATCC. The Association should adopt a policy of being willing to place ourselves in a position to recommend and endorse standards of performance in our area, as technology progresses to a point where proper standards are feasible, and where the user requires them.

PUBLICATIONS AND PUBLIC RELATIONS——If the AATCC is to exercise the leadership, which is regarded as a major challenge and responsibility for the future, it will need a very different concept of public relations than it now has. We lack a medium of our own to reach the industry and the public; we have no clear definition of the image we want to create in their eyes, and we have no planned public relations program through which we could assert our leadership.

A long-range plan in this area would involve definite publication of our journal. Here we should be very explicit as to the image we want to create in the mind of our industry. Some will want to move toward a scientific approach, such as is embodied in the *Textile Research Journal;* others perhaps to something approaching a McGraw Hill trade journal like *Textile World;* others to a confined news and technical journal like *Chemical Engineering News.* AATCC must make a thorough study of this specific problem and decide upon the types of media it should establish.

To carry on the publications program, consideration should be given to the employment of a full-time staff member who would serve as director of publications. He might also aid in the planning and execution of the public relations program.

(*concluded on page 56*)

EXECUTIVE COMMITTEE FOR '60 CONVENTION FORMED

THE Executive Committee for the 1960 National Convention, which will be held October 6-8 at the Sheraton Hotel, Philadelphia, Pa, has been formed. The Committee, headed by Convention Chairman Frederick V Traut and Cochairman William H Bertolet III, met Feb 1 at the Hotel Sheraton to discuss plans for the three-day event, and considerable progress to date was reported by each of the Subcommittee chairmen.

This year's Committee is made up as follows:

Chairman — Frederick V Traut, Globe Dye Works Co

Cochairman—William H Bertolet III, Laurel Soap Mfg Co

Dining—Joseph J Murphy, Laurel Soap Mfg Co

Entertainment—Walter W Gleadall, Textile Chemical Co

Exhibits—C T Anderson, Ciba Co, Inc

Finance — Donald W Robinson, Para-Chem, Inc

Ladies—Matthew A Noonan, Becco Chemical Div, FMC

Registration—A E Raimo, John Campbell & Co, and Ernst W Empting, Verona Dyestuffs

Printing — Clarence A Seibert, Scholler Bros, Inc

Publicity—L Kevin McChesney, Leatex Chemical Co

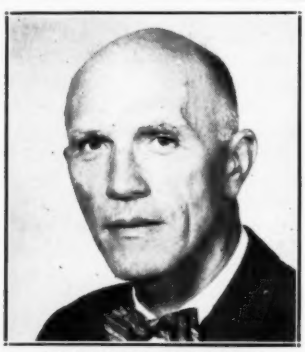
Reception—Thomas H Hart, Hart Products Corp

Reservations—Charles N Kuzma Jr, Amalgamated Chemical Corp

Technical Program — S Graeme Turnbull Jr, E I duPont de Nemours & Co, Inc

Transportation—William H Brehm II, Brehm & Stehle Dye Works

1960 CONVENTION EXECUTIVE COMMITTEE———Seated, l to r: Ernst W Empting, registration; Frederick V Traut, chairman; William H Bertolet III, co-chairman; Donald W Robinson, finance. Standing, l to r: L Kevin McChesney, publicity; Thomas H Hart, reception; William H Brehm II, transportation; Charles N Kuzma Jr, reservations; A E Raimo, registration; Joseph J Murphy, dining; Clarence A Seibert, printing; Walter W Gleadall, entertainment. Not present when photo was taken: C T Anderson, exhibits; Matthew A Noonan, ladies; and S Graeme Turnbull Jr, technical program.



CHARLES A SYLVESTER
Chairman
Executive Committee on Research

GEORGE S WHAM
Chairman
Technical Committee on Research

RESEARCH COMMITTEE NOTES

COUNCIL, on January 22, approved the appointment of Charles A Sylvester as chairman of the Executive Committee on Research, and George S Wham as chairman of the Technical Committee on Research.

CERTIFICATES OF SERVICE AWARDED———AATCC President Weldon G Helmus (fourth from left) is pictured with recipients of Certificates of Service at January 22nd meeting of the Technical Committee on Research. In photo are, l to r: John F Warner, Charles W Dorn, Charles A Sylvester, President Helmus, Ralph B Smith, Fred H Steiger, Richard F Aurich, Harold W Wolf, V B Holland, Sidney M Edelstein, and Emil C Hansen. Recipients who were not present when photo was taken were: Joseph E Norton, George Switlyk, John H Menkart, and Joseph H Jones. (See page 60 of Feb 8 issue).

ACTIVITIES OF THE LOCAL SECTIONS

(Photo by Kenneth C Everett)

Francis X Cooney (left), Cranston-Webster Co, Webster, Mass, talks with Norman S Cassell, guest speaker at the Rhode Island Section's January 29th meeting.

Rhode Island

APPROXIMATELY 180 members turned out for the Rhode Island Section's January 29th meeting at Lindy's Bali Room, Cranston, RI, to hear Norman S Cassell, vice president in charge of research and development, Interchemical Corp, speak on the subject "New Horizons for Pigment Printing and Dyeing".

The Section's next meeting will be held Friday, March 25 at the Providence Engineering Society.

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Niagara Frontier

HOMER L ROBSON, research chemist, Olin Mathieson Chemical Corp, Niagara Falls, NY, addressed the Niagara Frontier Section on the subject "Sodium Chlorite Bleaching" at a meeting held December 11, 1959 at Canisius College, Buffalo, NY.

The Section elected to retain its officers for this year, with the exception that J E Loughlin, National Aniline Div, succeeds T H Foltz Jr, Lockport Felt Co, as National Councilor.

Niagara Frontier Section will next meet jointly with the Ontario Section of the Canadian Association of Textile Colourists and Chemists on March 4 at St Catherines, Ontario, Canada. A regular meeting will be held in Buffalo on April 22.

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Delaware Valley

DELAWARE VALLEY SECTION will meet March 4 at Beck's-on-the Boulevard, Philadelphia, Pa. The meeting, which will be devoted to the subject of "Wash-and-Wear", will feature two speakers—Genevieve M Smith, manager, New York Textile Laboratory, Sears, Roebuck & Co, who will speak on " 'Wash-and-Wear' as the Consumer Views It"; and Thomas J Cronin, product development chemist, Quaker Chemical Products Corp, whose subject will be "Progress in 'Wash-and-Wear' Finishing of Cellulosic Fabrics".

While the past several years have witnessed significant advances in the technology of creaseproofing cellulosic fabrics, the full realization of the "wash-and-wear" concept is dependent on continued development of new chemicals and processing techniques. In his paper, Mr Cronin will discuss the present status of "wash-and-wear" finishing of cotton and rayon fabrics with particular attention to the more recent developments in creaseproofing agents. The limitation of today's finishes will be reviewed from the standpoint of improvements which may be forthcoming from current research.

Miss Smith, in answering the question . . . "Is the average consumer satisfied with 'wash-and-wear'? . . . will point out that "Mrs Consumer" likes the ease of care this merchandise promises, but that she complains that most garments do not live up to all the claims made for them. Mrs Consumer dislikes to "puddle" things out by hand, preferring to use her washer for all laundry. She does not believe that some garments can be worn without ironing. Garments also seem to wear out more quickly than they used to. Although she has not been completely satisfied, she hopes to obtain better-quality "wash-and-wear" with each purchase.

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South Central

SOUTH CENTRAL SECTION held its Winter Meeting at the Hotel Patten, Chattanooga, Tenn, on Saturday, Feb 6, with 90 in attendance.

Eugene Cote, Interchemical Corp, in charge of the afternoon technical session, introduced Lindsay Chase, director of Research and Development for Interchemical's Color and Chemical Div, who spoke on "This is Color", a topic based on the effect of light sources in color shades.

Speaker at the evening banquet was Karel Hujer, professor in astronomy and physics, Univ of Chattanooga. Dr Hujer, who recently visited two principal observatories in Russia, spoke on "Space Age—Russia and America".

Section Chairman Edwin Jurczak, Burkart-Schier Chemical Co, announced that the Section's Fall Meeting will be held September 10 at the Andrew Jackson Hotel, Knoxville, Tenn, with Jack McNab, Mac Chemical Co, in charge.

(Photo courtesy of Edward Artim)

O C Holland demonstrates a point during his talk before the Metropolitan Section on January 15.

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Metropolitan

O C HOLLAND, director of advertising, Printing Ink Div, Interchemical Corp, discussed "The Way We See Color" before approximately 150 members of the Metropolitan Section on January 15 at the Hotel New Yorker, New York, NY. Mr Holland has lectured about the psychology of color for over 13 years and is a prominent speaker on color in the graphic arts field. He used spectacular demonstrations with brilliant color, powerful lights and sparkling exhibits to illustrate the visual phenomenon of color.

Section members were entertained as well as informed about the blending and contrasting of color combinations in the fields of packaging, home decorating, and painting.

The following have been named chairmen of various committees within the Section: Edward Artim, publicity; P J Fynn, program; John P Redston, corporate membership; Richard E Kimble, individual membership; Charles H A Schmitt, research advisory; and Carl H Brubaker, sectional archives.

Northern New England

INCLEMENT weather held down attendance at a joint meeting of the Northern New England Section and the Textile Division of the American Society of Mechanical Engineers held January 15 at the Woodland Country Club, Auburndale, Mass.

Speaker for the Northern New England Section was Daniel Frishman, technical director, Malden Mills, Lawrence, Mass, who presented highlights of the Section's 1959 Intersectional Contest paper, "Pile Fabrics", which took first place in the 1959 Contest held at Washington, DC. Dr Frishman served as chairman of the Committee which prepared the paper. The paper appears in full in the December 14, 1959 issue of ADR, pages 103-113.

E J Stavrakas, senior research associate, Fabric Research Laboratories Inc, Dedham, Mass, on behalf of the ASME, spoke on the subject "Mechanical Properties of Textile Materials."

Mr Stavrakas discussed in detail the following tests, all of which he said could be performed adequately when less than a handful of experimental fiber is available: a) one-time load-to-rupture tests performed on a constant-rate-of-extension tensile tester such as the Instron; b) repeated stress tests, also performed on the Instron; c) high rate of strain studies, usually made on specially-constructed equipment making use of electronic and pneumatic devices; d) resonant frequency tests performed on a Vibrascope and used to precisely determine denier, particularly in an experimental fiber where there may be wide denier variations; e) repeated strain tests, in which the time involved in recovery from deformation is critical; f) pulse propagation tests, performed on the Pulse Propagation Meter, in which sonic pulses are transmitted through the fiber specimen and the time it takes for a pulse to travel a given distance is autographically recorded and used to determine the dynamic modulus of elasticity.

Mr Stavrakas pointed out that the above are not all of the techniques available to characterize the mechanical properties of fibers. However, using only the above tests—performed under controlled conditions by a skilled technician and interpreted by a textile scientist or engineer—many important fiber qualities can be determined at an embryonic stage in the production of the fiber, he claimed.

"Once we know the tenacity, rupture elongation, stress-strain curve shape, modulus of elasticity, elastic deformation (both immediate and delayed), bending modulus, inherent abrasion resistance (inferred from repeated stress tests), cross-section shape, and specific gravity of a fiber," Mr Stavrakas said, "we are able to apply engineering principles of the translation of fiber properties into yarn and fabric properties. While this will not tell us everthying we might want to know about how our neophyte fiber will perform once it gets into yarns and fabrics, it will usually give us enough information on which to make sound predictions relative to the technical potential of the fiber from a mechanical point of view."

In light of the huge amounts of money required to put a fiber into pilot and finally commercial production, Mr Stavrakas stressed the economic importance of exploring not only the mechanical and physical, but also the chemical potential of a fiber —insofar as possible—before a decision is made to go into pilot production.

(Photo courtesy of L E Rossiter, Nopco Chemical Co)

JOINT MEETING—NNE-SECTION-ASME TEXTILE DIV—L to r: Edward J McNamara Jr, Hamilton Chemical Corp, program chairman; Daniel Frishman, Malden Mills, Inc, NNE Section speaker; E James Stavrakas, Fabric Research Laboratories, Inc, ASME speaker; John J O'Neil Jr, Dow Corning Corp, NNE Section Councilor

(Photo courtesy of L E Rossiter, Nopco Chemical Co)

Robert D Robinson (center), Bachmann Uxbridge Worsted Co, Inc, NNE Section chairman, poses with incoming and outgoing chairmen of the Textile Division, ASME. Ted Fitzgerald (left), Draper Corp, is the Division's new chairman, succeeding Victor Sepavich (right), Crompton & Knowles Corp

Membership Applications

JANUARY 21—FEBRUARY 3, 1960

NEW ENGLAND REGION

Rhode Island Section

Senior

William C Martin Jr—Salesman, Synthron Inc, Ashton, RI. Sponsors: E J Jardis, R R Currier.

Western New England Section

Senior

Raimundo DeCastro—Dyer & lab tech, Hull Dye Works Inc, Derby, Conn. Sponsors: A A Bevino, F P Vagnini.

CENTRAL ATLANTIC REGION

Delaware Valley Section

Senior

Richard H Brehm II—Partner, Brehm & Stehle, Philadelphia, Pa. Sponsors: E W Empting, R B Stehle.

Hudson-Mohawk Section

Associate

William A Hosmer—Paper mill supt, Hurlbut Paper Co, South Lee, Mass.

SOUTHERN REGION

Piedmont Section

Senior

Chester G Landes — Consulting chemist, 4235 Kingswood Rd, Charlotte, NC. Sponsors: W E Rixon, W C Caldwell.

George R McRae—Dyer, Delta Finishing, Div of J P Stevens Co Inc, Wallace, SC. Sponsors: P R O'Connell, E W Fitch.

Associate

William R Jackson—Dir flake res, Zonolite Co, Travelers Rest, SC.

Junior

Lewis M Redd Jr—Chemist, Union Bleachery, Greenville, SC. Sponsors: E S Tillinghast, E G Jones.

Transfer to Senior

Donald M Hankins — Dyehouse trainee, Fairforest Finishing Plant, Reeves Brothers Inc, Spartanburg, SC. Sponsors: W E Baldwin, J B Neely.

Kenneth L McKinney—Shift supt, Proximity Print Works, Greensboro NC. Sponsors: G R Hilton, G F Walz.

Joseph H Padgett—Dyer, Stonecutter Mills Corp, Spindale, NC. Sponsors: W C Ragin Jr, J R Taylor.

Sanford P Young—Owner, Young Chemicals Associated, Greensboro, NC. Sponsors: G O Linberg, G P Paine.

Transfer to Associate

Chung Sun Suh—Trainee, Dev Finishing Plant, Burlington Industries, Greensboro, NC. Sponsors: G R Thompson, G M Kidder.

Transfer to Junior

Strother E Murdoch Jr—Trainee in dyeing, Dublin Finishing Co, Dublin, Va. Sponsors: W J Ratcliffe, E W Teague.

Washington Section

Junior

Emily Ann Watt—Lab tech, Harris Research Labs Inc, Washington, DC. Sponsors: J F Krasny, H E Harris.

WESTERN REGION

Mid-West Section

Transfer to Senior

Arthur Anninos—Chemist, Emery Industries Inc, Cincinnati, O. Sponsors: L M Wise, J A Piepmeyer.

STUDENT CHAPTERS

Alabama Polytechnic Institute

Billy W Strickland—Student, Alabama Polytechnic Institute, Auburn, Ala. Sponsor: James H Cox.

Clemson College

Guillermo Bito Montemayor—Student, Clemson College, Clemson, SC. Sponsor: Joseph Lindsay.

Thomas W Templeton—Student, Clemson College, Clemson, SC. Sponsor: Joseph Lindsay.

UNCLASSIFIED

Senior

Chew Han Chen—Engr, tex dyeing dept, En Hou Dyeing & Printing Mill Ltd, Kan Tze Chueh, Chung Lee, Touyuan Hsien, Taiwan. Sponsors: G M Kidder, G J Mandikos.

Walter K Gutmann — Chemist, Farbwerke Hoechst AG, Frankfurt Main, Hoechst, West Germany. Sponsors: C W Kuhl II, H Luttringhaus.

Karl F Keirstead—Chief chemist, Lignosal Chemicals Ltd, Quebec, Canada. Sponsors: G M Kidder, G J Mandikos.

Ting Shun Leu—Engr, En Hou Dyeing & Printing Mill Ltd, Kan Tze Chueh, Chung Lee, Touyuan Hsien, Taiwan. Sponsors: G M Kidder, G J Mandikos.

Juergen E Von Klenck—Head, application center, chemist, dir, Farbwerke Hoechst AG, Frankfurt Main, Hoechst, West Germany. Sponsors: C W Kuhl II, H Luttringhaus.

Otto F Ziegler—Charge of application dept-dyes, Farbwerke Hoechst AG, Frankfurt Main, Hoechst, West Germany. Sponsors: C W Kuhl II, H Luttringhaus.

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks may be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

60-1

Education: BS and post graduate courses in chemistry and mathematics. Read and speak French and German.

Experience: All problems on dyeing and finishing of polyacrylic and polyamide fibers and their blends with other fibers; trouble shooting, adaptation of old equipment to new processes and original development work. Complete resume on request.

Position desired & location: Research, development or technical service in any of the above fields with responsibility and opportunity. Willing to travel, locate in North America, Europe or Australasia.

Age: 30; single; fit and ambitious.

60-2

Education: BS (chem & dye).

Experience: Chem engineer, finishing chemist, piece and skein dyer.

Position desired: More responsible position.

Location: West Coast preferred. (Anywhere).

Age: 40; married; three dependents; excellent references.

60-3

Education: High school, 2½ years of college.

Experience: Standardization and trouble shooting, head dyer and superintendent.

Position desired: Superintendent of dyeing, sales, production dyer.

Location: Anywhere.

Age: 34; married; three dependents; excellent references.

AATCC Deceased

Member	*Section*
T CURTIS McKENZIE Dearborn, Mich	MW
THOMAS H FLOOD Toronto, Ont	NF
WILLIAM A FALCONER Cardiff, U K	—

Study Committee on Long-range Objectives———

(concluded from page 51)

TECHNICAL AND SCIENTIFIC ACTIVITIES ——— The technical functions of the AATCC in the past may be stated as having been, in effect, "the defining of quality through the development or establishment of test methods for the properties imparted to textiles during dyeing and finishing."

While not stated as such in our objectives, our Association has sought to provide a technical basis through the establishment of test methods, to make possible the comparison of quality, and the establishment of standards by all producers and users of textiles.

This function of AATCC of establishing test methods grew out of the need a generation ago, for mill people and suppliers of chemicals and dyestuffs to be able to meet on common ground technically and to reach common terminology with respect to the performance of products.

This function is still needed, both with repect to "old" areas, where we have worked out the technical basis of performance in test methods already developed, and in respect to "new" areas, where advancing technology is presenting the industry with new problems of quality definition.

In "old" areas, our technology is still advancing and new insights make possible continuing improvements in what we have already done. Here, we keep our committees on a "stand-by basis" to deal with new problems as they arise.

It is in the so-called "new" areas where the AATCC is confronted with its major problems today—problems arising from the trends referred to above or from new technology which is creating new products, or new properties in old products.

It is in these areas where we can judge the effectiveness of AATCC today. Here it is apparent that for the most part we are following rather than leading—waiting for problems to develop, rather than anticipating them and being prepared with a strong technical program to meet them.

AATCC should assume a position of technical leadership in its field and should organize appropriately to insure that it will be able to provide that leadership to our industries.

This means that instead of waiting until a situation has developed where the industry sends out a cry for help, we should utilize our resources and our organization to anticipate the problem. We should have an advance plan five to ten years ahead, subject to revision annually, or more often if necessary, so that we may be fully prepared to deal with any new technical development. This would include both technical programs, and public relations programs which would have the effect of promulgating sound information to the consumer.

The functions of the Technical Committee on Research should be reviewed to define more specifically its responsibilities for providing a long-range program and insuring effective leadership on the part of AATCC in its field.

In general your committee feels that in any area where such tremendous sums are being spent by private organizations on research, the limited funds available to the Association should not be expended on research as such.

It is felt that the support now provided by the Association to its "research" committees should be looked upon as a technical effort rather than research in order that we can avoid some of the ambiguity which now exists with respect to what the Association is endeavoring to do in this area. Generally speaking, it is felt that it would be beneficial to the Association if its "research" committees were redesignated as technical committees, and its research director identified as a technical director. This would clarify our actual objectives in this area which are to provide technical support to our voluntary committees.

CONSUMER RELATIONS——— The AATCC should recognize consumer needs in our area as another dimension of technical effort, over and beyond the chemical and manufacturing areas and should develop a positive program concerned with consumer and end-use needs.

Test methods and technical developments in the chemical and manufacturing areas must unavoidably be a major concern of AATCC. However, consumer needs must be recognized not simply as an extension of the area, but as a separate and different dimension of effort.

To meet consumer needs we need a more effective organization in this area than we now have. The Committee on End Usage Performance Tests has done a splendid job of opening up for us a picture of the significance of this area to AATCC.

More planning is needed, however, to establish on a proper basis an effective Consumer Interests Committee.

AATCC'S NAME———This committee has noted that the American Society for Testing Materials, which has also had a Long-Range Planning Committee reviewing its function in its field, has given serious consideration to the change of name of their Association to get away from the connotation of excessive concentration upon "testing". They have recently proposed two possible new names for the Association as follow:

Association for Standardization and Technology for Materials

American Society for Science and Technology of Materials

Your committee has given consideration to this matter, but feels that the present name of our Association is both distinctive and also adequate, from a long-range standpoint, and accordingly it is considered that there is no need to give further thought to any change of name.

DATE OF 219th COUNCIL MEETING CHANGED

The date for the next meeting of the Council has been moved up two weeks from the originally scheduled date of May 13. The 219th meeting will be held Friday afternoon, May 27, at the Sheraton-Atlantic Hotel, New York, NY.

Meetings of various committees of the Council and research subcommittees will be held the day previous, ie, Thursday, May 26. Meetings of the Technical Committee on Research and Executive Committee on Research will be held Friday morning prior to the Council meeting.

Council has approved holding a September meeting in Atlanta.

ORGANIZATION OF THE AATCC

FOUNDER

LOUIS A OLNEY
(deceased)

COUNCIL OF THE ASSOCIATION

PRESIDENT ..... WELDON G HELMUS, Fair Lawn Finishing Co, Fair Lawn, NJ

VICE PRESIDENTS ..... *(New England Region)*: W GEORGE PARKS, University of Rhode Island, Kingston, RI; *(Central Atlantic Region)*: C T ANDERSON, Ciba Co, Inc, 4241 N 2nd St, Philadelphia, Pa; *(Southern Region)*: A HENRY GAEDE, Laurel Soap Mfg Co, PO Box 1083, Charlotte 1, NC; *(Western Region)*: JOSEPH H JONES, Phoenix Dye Works, 4755 W 150th St, Cleveland 35, O.

TREASURER ..... ARTHUR R THOMPSON, Ciba Co, Inc, PO Box 1988, Charlotte 1, NC

EXECUTIVE SECRETARY ..... GEORGE P PAINE, AATCC National Headquarters, PO Box 28, Lowell, Mass

CHAIRMAN, EXECUTIVE COMMITTEE ON RESEARCH ..... CHARLES A SYLVESTER, E I duPont de Nemours & Co, Inc, Rm 8516, Nemours Bldg, Wilmington 98, Del.

PAST PRESIDENTS (Living) ..... ELVIN H KILLHEFFER, P J WOOD, WILLIAM H CADY, CARL Z DRAVES, THOMAS R SMITH, WILLIAM D APPEL, HENRY F HERRMANN, C NORRIS RABOLD, J ROBERT BONNAR, GEO O LINBERG

NATIONAL COUNCILORS REPRESENTING SECTIONS
(Northern New England): J J O'NEILL JR, R J PEIRENT, G F QUIGLEY; *(Rhode Island)*: R F CAROSELLI, E W LAWRENCE, A F McLEAN, R B TAYLORSON; *(Western New England)*: A W GOODWIN; *(Delaware Valley)*: T H HART, L K McCHESNEY, M J REIDER, D W ROBINSON, W S SOLLENBERGER; *(Hudson-Mohawk)*: J J HANLON; *(Metropolitan)*: W A HOLST, P J LUCK, R E MILLER, R P MONSAERT JR, B F QUIGLEY, E I STEARNS, G S WHAM; *(Niagara Frontier)*: J E LOUGHLIN; *(Piedmont)*: J C KING, E A MURRAY, W E RIXON, R E RUPP, N A TRUSLOW, C L ZIMMERMAN; *(South Central)*: R N INGRAM, J D MOSHEIM; *(Southeastern)*: J C COOK, W E FAYSSOUX, J W RICHARDSON; *(Washington)*: L SMITH; *(Mid-West)*: A I HULTBERG, J G KELLEY, A J OLSON; *(Pacific Northwest)*: J L AYRES; *(Pacific Southwest)*: H W ELLSWORTH

TREASURER EMERITUS

WILLIAM R MOORHOUSE
PO Box 352, South Yarmouth, Mass

CHAIRMEN, COMMITTEES OF THE COUNCIL

STANDING COMMITTEES—	
Executive Committee of Council	WELDON G HELMUS
Executive Committee on Research	CHARLES A SYLVESTER
Technical Committee on Research	GEORGE S WHAM
Publicity	EDWARD ARTIM
Appropriations	THOMAS R SMITH
Membership and Local Sections	W GEORGE PARKS
Publications	PAUL J LUCK
Corporate Membership	C T ANDERSON
Constitution and Bylaws	WILLIAM A HOLST
Conventions	E MORRILL
Technical Program	S G TURNBULL JR
Technical Supplies	GEORGE P PAINE
Archives	SIDNEY M EDELSTEIN
Intersociety Relations	ALBERT E JOHNSON
Textile Education	LEONARD SMITH
Subject and Speakers' Bureau	MATTHEW J BABEY
SPECIAL COMMITTEES—	
Intersectional Contest	THOMAS J GILLICK JR
Employee Retirement and Pension	WALTER J HAMBURGER
Harold C Chapin Award	DONALD W ROBINSON
Study Committee on Intersectional Contest	THOMAS J GILLICK JR
Study Committee on Long-Range Objectives	ERNEST R KASWELL
Study Committee on Endowment Fund	P J WOOD
Committee on Individual Membership	H A STAUDERMAN
Study Committee on Location of National Headquarters	SYDNEY M CONE JR
Student Award	JOSEPH LINDSAY JR
Olney Medal	E W LAWRENCE
American Dyestuff Reporter Award	CARL Z DRAVES

NATIONAL HEADQUARTERS

SENIOR STAFF	
Executive Secretary	GEORGE P PAINE
Director of Research	HAROLD W STIEGLER
Tech Manager-Research Associate	GEORGE J MANDIKOS
Staff Editor-Research Associate	G ROBERT THOMPSON
Research Associate	GLEN M KIDDER

LOCAL SECTION OFFICERS

New England Region

NORTHERN NEW ENGLAND ..... *Chairman*: ROBERT D ROBINSON, Bachmann-Uxbridge Worsted Corp, Uxbridge, Mass; *Secretary*: JOSEPH S PANTO, Fabric Research Labs Inc, 1000 Providence Highway, Dedham, Mass; *Vice Chairman*: EDWARD J McNAMARA; *Treasurer*: WILLIAM W PENNOCK

RHODE ISLAND ..... *Chairman*: ROBERT H PHILLIPS, Cranston Print Works Co, Cranston, R I; *Secretary*: RICHARD V DUGDALE, Rohm & Haas Co, 1226 Industrial Trust Bldg, Providence 3, RI; *Vice Chairman*: JOHN J ROARKE; *Treasurer*: HAROLD B STURTEVANT

WESTERN NEW ENGLAND ..... *Chairman*: ALBERT H RANT, Laurel Soap Mfg Co. 206 Calla St, Providence 6, RI; *Secretary*: HENRY C SPEEL, Schwarz, Speel & Associates, PO Box 53, Darien, Conn; *Vice Chairman*: TIMOTHY J HORAN; *Treasurer*: MURRAY N LEFKOWITZ

Central Atlantic Region

DELAWARE VALLEY ..... *Chairman*: CLARENCE A SEIBERT, Scholler Bros, Inc, Collins & Westmoreland Sts, Philadelphia 34, Pa; *Secretary*: ERNST W EMPTING, Verona Dyestuffs, 351 Lancaster Ave, Haverford, Pa; *Vice Chairman*: EDWARD G HAACK; *Treasurer*: CHARLES N KUZMA JR

HUDSON MOHAWK ..... *Chairman*: FLOYD J SZUREK, Mohasco Industries, Inc, Amsterdam, NY; *Secretary*: ARMAND DI MEO, Rebel Dyeing Corp, Gloversville, NY; *Vice Chairman*: ACHILLES S MAFILIOS; *Treasurer*: WALTER DRAUTZ

METROPOLITAN ..... *Chairman*: JOHN A KOMNINOS, Waldrich Company, River Rd, Delawanna, NJ; *Secretary*: RICHARD P MONSAERT JR, American Felt Co, 350 Fifth Ave, New York, NY; *Vice Chairman*: PERCY J FYNN; *Treasurer*: EUGENE J GRADY

NIAGARA FRONTIER ..... *Chairman*: KENNETH A LISTER, Canadian Industries, Ltd, Hamilton, Ont, Canada; *Secretary*: EARL R EAKINS, Monarch Knitting Co, Ltd, Dunnville, Ont, Canada; *Vice Chairman*: ANTON M VIDITZ-WARD; *Treasurer*: JOSEPH D NOONAN

Southern Region

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STUDENT CHAPTERS

Alabama Polytechnic Institute, Bradford Durfee College of Technology, Clemson College, Georgia Institute of Technology, Lowell Technological Institute, New Bedford Institute of Technology, North Carolina State College, Philadelphia Textile Institute, Rhode Island School of Design

ALL FOUR VOLUMES

OF THE SECOND EDITION

COLOUR INDEX

NOW AVAILABLE

Your prepaid subscription received promptly will insure your possession of this LIMITED EDITION, a tremendously valuable work on the free world's dyestuffs and pigments in commercial use. Published by the Society of Dyers and the Colourists (British) and the American Association of Textile Chemists and Colorists, these four volumes totaling 3152 pages provide the only complete reference of coloring matters available to those interested in this field. They include information on methods of application and fastness properties of coloring matters furnished by world manufacturers, chemical and structural information, characteristic reaction, index of products and trade names, fastness tests and rating methods, new and old COLOUR INDEX NUMBERS, Schultz and AATCC prototype numbers and a hue indication chart.

Orders in the United States, Mexico, Central and South America (excluding British possessions) should be placed with—

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FEBRUARY FUGUE
1960

Inter Alia—Inter Nos

P J WOOD

IT COULD HAPPEN AGAIN

Sixty years ago, on February 6, 1900, Teddy Roosevelt announced..."Under no circumstances could I or would I accept the nomination for the Vice Presidency". These are almost the identical words of two present aspirants for the Presidential office. We have heard them quite recently.

Our guess is that the majority of our readers were born about that time, and many of them much later, so that they could not be expected to remember that Teddy changed his mind four months later.

It would not be too much to expect that one or both of these Presidential candidates might have a change of mind that would go to prove the old saw..."History repeats itself".

SUCCESS

The Third International Exposition of Textile Machinery seems to have surpassed any of its predecessors, according to the report rendered by the Belgian magazine, Rayonne et Fibres Synthetiques, and news transmitted by several friends.

There were 600 exhibits from 12 nations, which were viewed by 155,000 visitors from over 70 different countries; the organizers say that the value of the machinery shown was more than "5 milliards de lires", which will make a neat problem for any of our readers to solve who are good mathematicians and skilled in foreign exchange. Observers noted great strides in construction and materials of the offerings that have appeared since the last exhibition, which took place in Brussels four years ago.

Out of a total area of 34,000 square meters, the Belgian exhibitors occupied 2,600 meters divided among 20 exhibitors. "At first sight", says the reporter, "20 exhibits out of 625 would appear to pass unnoticed". These 20 manufacturers, it may be mentioned, represent about one third of the Belgian textile machinery and accessory makers. Such, however, was not the case; they seem to be fully satisfied with their participation in the affair.

In a very few days, some of them had sold everything exposed in their exhibit. Others said that, by the fourth day, they accumulated enough orders to keep them busy for the whole of 1960. They are hoping that, at the next International Exposition of Textile Machinery, which is to be held in Hanover, Germany in 1962, they may do equally well.

All of which reminds us that we have a Textile Machinery Exhibition in May; as usual it is to be held in the Auditorium in Atlantic City, NJ, which is a jolly place to be in the merry month. This convocation seems to be tending to develop into an international exposition; year after year we seem to note more and more exhibitors from overseas.

KUDOS

"It must be remembered that life values are measured in terms of service and that the value of a life cannot be equated in terms of money".

So said Arthur E Wood, head of the Department of Chemistry at Mississippi College, Clinton, Miss, on the occasion of the presentation to him of the Honor Scroll of the Louisiana Chapter of AIC in New Orleans.

A year before this he had received a College Chemistry Teacher award offered by the Manufacturing Chemists' Association.

In his encomium of Dr Wood, Thomas D Fontaine, who is head of the Fellowships Section of the National Science Foundation, had this to say (Chemist, Sept, '59):

> "More than 500 chemistry majors have been awarded baccalaureate degrees from Mississippi College during his tenure. Over 65% of these are currently employed in activities related to the training in chemistry. Chemistry doctorates are held by 40 of these majors and an additional 50 have earned masters' degrees in chemistry. Many of these hold professorships of chemistry in senior colleges and universities, many hold important positions in industry and government".

Our hat is off to Dr Wood for his lifetime devotion to the development of chemists and of men; it is quite evident from reading this record of accomplishment that, in some magical way, he has succeeded in imbuing this small army of scientists with his own inspired outlook on life; he has shown them how to win in the eternal conflict between noble ideal and ignoble reality.

* * * * *

In a later number of the Chemist, the organ of the American Institute of Chemists, we find an account of the conferring of Honorary Membership in AIC on Lincoln T Work, who may be the tallest member of the Chemists' Club.

Dr Work made a splendid address on "The Unchanging Aspects of Professionalism in this Changing World". Look it up in the Jan 1960 Chemist. It is long, but you will enjoy reading it, every word of it! The talk ends on a very high note, with the quotation of the Engineers' Creed, adopted by the National Society of Professional Engineers June 1954:

THE ENGINEERS' CREED

As a Professional Engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare. I pledge:
To give the utmost of performance;
To participate in none but honest enterprise;
To live and work according to the laws of man and the highest standards of professional conduct;
To place service before profit, the honor and standing of the profession before personal advantage, and the public welfare above all other considerations.
In humility and with need for Divine Guidance, I make this pledge.

As chairman of the Library Committee of the Chemists' Club, Lincoln Work did an outstanding job and evidently trained a worthy successor to follow him, Robert Bateman.

While it may be somewhat extreme to designate the chemist as the "forgotten men", it is no exaggeration to call him the "seldom-remembered man"; although he may labor patiently "in secret", occasionally he is "rewarded openly".

QUERY

Are you smoking less, these days, and enjoying it more? We are an inveterate nonsmoker; we were born that way; nonsmokers are born, not made. We are like the man who said he knew honesty is the best policy as he had tried both ways. We tried smoking for fifty years; now we have started on fifty years of nonsmoking. At the expiration of this second period we should be qualified to write an authoritative book on the subject, don't you think?

Warning: Never smoke in bed; the ashes that fall on the floor may be your own.

TIPS

We have an idea that we are not going to be sorry that we took out a subscription to The Insider's Newsletter as a charter subscriber, a few weeks ago. So far this little news sheet fulfils all the promises made for it. The subjects covered are legion - even financial advice - for example, "Arkansas Louisiana Gas is showing no letup in expansion which has more than trebled earnings in four years". They also announce that Cities Service is about to drill a hole for oil in the heel of Italy's boot on April 1. Oodles of oil have been found in North Africa, we understand, so this may be a continuation of the formation on the other shore of the Mediterranean. TIN forecasts that "Gone With the Wind" is to be released by Loew's, next year, at the time of the Civil War Centennial celebration.

QUOTES & QUIPS

MENTAL HEALTH

Quote quotes from a source of which we have never heard, "Elementary English", this startling statistic..."At least 17,000,000 Americans (one in every ten) are suffering from a mental or emotional disorder."

BUDGET

"Unexpected expenses are something that one must expect." - Southern Textile News

UNCLASSIFIED INFORMATION

We were telling Archie Smith of Standard Bleachery we heard that the new submarines only surface once in every four years so that the crews can reenlist. Archie says he hopes the crews are co-educational.---Q.E.F.

News of the Trade

30th Annual Meeting, TRI

Textile Research Institute will hold its 30th Annual Meeting on Thursday and Friday, March 24-25, at the Hotel Commodore, New York, NY. Program for the two-day meeting has been arranged by General Chairman Leonard Smith, National Cotton Council of America.

Opening the meeting on Thursday will be a presentation of research carried out at TRI's Princeton, NJ, laboratories during 1959 to be given by various senior members of the TRI staff.

Thursday's featured luncheon speaker will be James H Wakelin, Assistant Secretary of the Navy for Research and Development. Another feature of the luncheon session on Thursday will be the presentation of an award of Honorary Fellowship of Textile Research Institute.

Subjects to be covered during Thursday will include: "Reversible Crimp in an Acrylic Fiber," by Elijah M Hicks, Jr, Orlon technical director, Textile Fibers Dept, E I du Pont de Nemours & Co, Inc, Wilmington, Del; "SM-27, A Man-Made, High-Modulus, Cellulosic Fiber," by Geoffrey V Lund, director of technical research & development, Courtaulds (Ala) Inc, and "Crease Recovery and Wash-Wear Behavior in Cellulosic Fabrics," by Richard O Steele, Head, Textile Research Laboratory, Rohm and Haas Co, Philadelphia, Pa.

The Thursday morning session will be under the guidance of Leonard Smith, while the afternoon session will be directed by Norman C Armitage, vice president, Deering Milliken Research Corporation, Spartanburg, SC.

A meeting of TRI's Board of Trustees will be held on Thursday afternoon for the principal purpose of electing officers for the coming year.

The Friday morning session, under the chairmanship of A Griffin Ashcroft, research consultant, will feature: "Principles of Nonwoven Fabrics", by Stanley Backer, associate professor of mechanical engineering, Massachusetts Institute of Technology, Cambridge, Mass; "Some Developments in Wool Research in Australia", reported by M Lipson, chief, Division of Textiles Industry, CSIRO, Wool Research Laboratories, Geelong, Australia; and "Recent Improvements in Textile Processing Machinery and Methods" by Ralph A Rusca, head, machinery development, Southern Utilization Research and Development Division, USDA, New Orleans, La.

At the Friday luncheon, Dr Smith will introduce TRI's new officers for 1960. Also during this session, a report on the Institute will be given jointly by William E Clark, vice president, Textile Division, U S Rubber Company and chairman of TRI's Board of Trustees, and John H Dillon, TRI President.

The Friday afternoon session, headed by Alfred E Brown, director of research, Harris Research Laboratories, Washington, DC, will open with a paper dealing with fiber developments presented by a representative of Celanese Corp of America. This is to be followed by a paper on "Recent Developments in Polyvinyl Alcohol Fibers" by Richard D Wells, Air Reduction Chemical Co.

Immediately adjacent to the meeting room, in the Commodore's West Ballroom, will be a display of testing equipment, instrumentation and fibers. The exhibit will be open to the public without charge.

The Annual Meeting is open to all. There will be a $10.00 registration fee to cover both days of the meeting and tickets for luncheons on Thursday and Friday will be available for $6.00 each day. Advance reservations may be made by writing to the Institute's secretary, P O Box 625, Princeton, NJ.

•

3rd Textile Engineering Conference

Engineering advances in textile manufacturing and textile improvements that can aid the engineer will be the dual themes of the third annual Textile Engineering Conference at Raleigh, North Carolina, March 31-April 1, 1960. The conference is sponsored by The American Society of Mechanical Engineers, 29 West 39th St, New York 18, NY.

Among the subjects scheduled for presentation at the meeting on the campus of North Carolina State College are: design of treatment plants, natural gas in the textile industry, modern trends in the production of bulked yarns, direct spinning, textile processes, automation and preventive maintenance.

Chemical Trademarks Cataloged

Registered U S Chemical trademarks have been cataloged in the files of the Cheminform Institute, Coliseum Towers, New York 19, NY.

In addition there are listed unregistered trademarks, common, generic and trivial names and synonyms of dyes, chemicals, drugs, cosmetics, food additives, coatings, fibers, alloys, insecticides, fungicides, plastics, plasticizers, emulsifiers, lubricants, pigments, waxes, surfactants, detergents, resins and chemical compositions for use in various industries. The chemical composition, use and manufacturers are given. Foreign products are included.

A leaflet describing this information service is available on request.

•

Althouse Expanding Customer Services

A stepped-up program of customer services for 1960 was outlined at a recent sales meeting of the Althouse Chemical Company by Felix Buskey, executive president and general manager.

Mr Buskey said Althouse is extending its work with synthetic fibers through its Research Applications Center and is adding facilities for new high-temperature and high-pressure dyeing. The first major research installation is the high-pressure dyeing unit now being built by Althouse engineers. The new unit reportedly will be large enough for high-pressure and high-temperature dyeing of larger samples.

Harold Gift, director of the Research Applications Center, in his remarks, stated that Althouse will continue to service the dyeing industry by developing new processes to help manufacturers meet quality dyeing requirements for the many new synthetic fibers. He added that, in 1959, the applications center dyed 30,000 samples for customers.

Other plant improvements planned for 1960 were outlined by Otto Putnam, plant superintendent.

Salesmen who attended the conference included Christopher Farrell, Hohokus, NJ; Joseph MacNeil, Middletown, RI; Walter Kiebach, Reading, Pa; Jack Andrews, Greenville, SC; Kenneth Johnson, Chattanooga, Tenn; and James Morton, Salisbury, NC.

Heyden Newport Building Maleic Anhydride Plant

Heyden Newport Chemical Corp is proceeding with the building of its maleic anhydride plant at Fords, NJ, the preparatory engineering phases having been completed.

The new plant, the first maleic anhydride venture for Heyden Newport, reportedly will have a capacity of 24,000,000 pounds per year. The anticipated onstream date for the new plant is during the fourth quarter of 1960. Wide design flexibility will permit the production of related chemical intermediates.

The consumption of maleic anhydride is estimated to double by 1965. A major portion of this growth is expected in the resin field, where Heyden Newport is a long-established supplier of intermediates and specialty chemicals. The largest single contributing factor to this expanded demand will be the polyester-resin application, where growth rates of 30% to 50% per year have been recently experienced. Significant advances are also expected in intermediates and special applications, as well as in new polymers emerging from development laboratories.

•

Hooker to Expand Chlor-Alkali Capacity at Niagara Falls, Build Potassium Phosphate Plant at Jeffersonville

To increase production capacity of caustic soda, caustic potash and chlorine at its Niagara Falls, NY, plant, Hooker Chemical Corp plans to invest about $10-million in a new installation of Hoechst-Uhde mercury-type electrolytic cells during 1960-1961. This expansion is designed to meet the company's requirements for these chemicals both for direct sales and for manufacture of other chemicals.

The cell installation should be completed by the late spring of 1961.

Hooker's Phosphorus Division has approved plans for the construction of a potassium phosphate plant at Jeffersonville, Ind, to be in operation by mid-1960. The principal product to be manufactured will be tetra potassium pyrophosphate.

Hooker is a major producer of sodium phosphate and through this move is broadening its product line by adding potassium phosphates. Hooker is also an important producer of phosphorus and caustic potash, the raw materials from which tetra potassium pyrophosphate is derived.

Hooker's Phosphorus Division operates plants at Jeffersonville; Adams, Mass; Columbia, Tenn; and Dallas.

Emery Industries' Executive Vice President A W Schubert turns the first "shovelful" of earth for the company's $6,000,000 expansion of ozone oxidation facilities while Emery's organic chemical sales representatives look on. Immediately flanking the scoop are K K Boyd (right), vice president of the Chemical Products Division, and R F Brown, organic chemical sales manager. The ground-breaking climaxed the recent sales meeting of the Organic Chemical Sales Department, which also included sessions devoted to product utilization and sales planning. Emery's present oxidation plant for production of azelaic and pelargonic acids by ozonolysis of oleic acid is in the near background.

Monsanto to Manufacture Alkyl Phenols at Kearny, NJ

Monsanto Chemical Co has begun construction of facilities for the manufacture of various alkyl phenols at its Kearny, NJ, plant.

Most of the plant's production will be used by Monsanto in the manufacture of alkyl phenol-based ethylene oxide condensates. Monsanto recently announced its plans to produce and market these condensates as part of its line of Sterox nonionic surface-active agents.

The plant is scheduled for completion in September. Cost and capacity of the new facilities were not announced.

•

Ultra Modern Phone System Installed by Metro-Atlantic

Metro-Atlantic, Inc, announces that one of the newest and most modern telephone systems in the country has been installed at its main offices and plant in Centredale, RI.

The new installation is known as an attended dial PBX with 3A Code Call. This equipment provides inter-office communication without the assistance of an operator. Certain stations may also dial directly outside by first dialing the correct pre-fix. The Company reports that trunk capacity has been doubled and provides a noticeably better grade of customer service on incoming calls.

The 3A Code Call System enables the operator or any station user to sound a code on bells and horns located throughout the plant area. The "called" party, hearing his signal, goes to the nearest telephone, dials a predetermined number, and is immediately connected to the calling party. This again cuts down on line-holding time, thereby better utilizing the equipment and the time of everyone involved.

It is believed that Metro-Atlantic, Inc is one of the first plants of its kind in the country to install this method of plant communications.

•

GAF Moves Home Office

General Aniline & Film Corp moved its Home Office in New York to larger quarters in the new Time and Life Building at 111 West 50th St on Monday, January 25.

The Corporation's Home Office, which was formerly at 230 Park Ave, now occupies the 44th floor of the Time and Life Building, the latest addition to Rockefeller Center.

The general purchasing offices of GAF's Dyestuff and Chemical Division are located at 435 Hudson St, New York 14, NY.

•

New Charlotte Sales Office for Hercules' Virginia Cellulose Dept

Establishment of a new sales office in Charlotte, NC by the Virginia Cell-Cellulose Dept of Hercules Powder ulose Dept of Hercules Powder Co.

George S Baird is in charge of the office, located in the Wachovia Bank Building. Opened on Monday, January 4, the sales and technical service of CMC, CMC warp size, and cotton linters in the southeast will be handled by the new office.

Mr Baird, for the past three years, has been the department's special field representative in the southeast, specializing in textile warp sizing.

Holds Potential for Latex Utilization in Textiles "Scarcely Scratched"

Quebec Section members of the CATCC were told, at a December meeting, that the use of latex materials in modern textile manufacturing has already achieved very definite advances, but so far only the surface has been scratched.

L L Shailer, manager of sales development in textile chemicals, B F Goodrich Chemical Co, Cleveland, Ohio, said that, since the end of World War II, the use of latices has made great strides in the fields of nonwoven fabrics, the backcoating of carpeting and upholstery, as an aid to decorative and functional finishes, wear resistance, and others.

This, he stated, had resulted in improved manufacturing methods, performance, and cost conditions.

"In wear resistance the use of vinyl plastic latex provides an excellent abrasion-resistant finish at very low cost with appearance characteristics readily restored each time the fabric is pressed.

"This represents an extremely attractive area for alert converters because of the high level of wear resistance which can be achieved without resorting to costly changes in basic fabric construction, such as the incorporation of man-made fibers.

"But despite the progress which has been made to date, the potential for latex utilization within the textile industry has scarcely been scratched," he said.

•

NSCC to Expand Corn-Milling Operations

Steadily increasing demand for chemically modified corn starches has been disclosed in an announcement by National Starch and Chemical Corp as a prime factor in the company's major expansion of corn-milling operations at its Indianapolis, Ind plant.

J F Fitzgerald, vice president in charge of starch sales, said that the new equipment will expand National's present corn wet milling capacity by an additional one-third, bringing the yearly grind to seven-million bushels.

The latest type facilities have been added for corn grinding and separating, storage, steeping and by-product processing. Extra plant space has been constructed to house the above apparatus as well as attendant drying and packing facilities which have been installed to handle the increased quantities of processed corn starch.

WHO WILL WIN? Charles E Brookes, Dewey and Almy's organic chemicals marketing manager, asks the question of his field sales manager, John G Broughton, as they announce new competition for sales force.

Dewey and Almy Salesmen in Award Program

Dewey and Almy's organic chemicals sales force has begun to participate in the Distinguished Salesman's Award Program conducted by member clubs of the National Sales Executives, Inc.

The plan will periodically reward the salesman turning in the best performance in sales of the firm's vinyl emulsions and butadiene styrene latices.

Through the Boston Sales Executives Club, Dewey and Almy will make its first award in the spring of 1960. The winner and his wife will receive an expense-paid trip to Boston to receive an award trophy.

•

FTC Weighing New Generic Name for Zantrel

Hartford Fibres Company, a Division of Bigelow-Sanford Carpet Co, has filed an application with the Federal Trade Commission for a new generic name, "Polynosic," for its new cellulosic fiber, which will be produced in the United States commencing this summer.

The spokesman for Hartford indicated the strong hope that the problem of proper identification of a new generic name for this new fiber can be worked out with the Federal Trade Commission, since this fiber was not under consideration when the Commission adopted the rules and regulations for the Textile Fiber Products Identification Act.

This "Polynosic" fiber is being marketed under Hartford's tradename, Zantrel, and is being imported by Hartford Fibres from the Gauchy, France plant of Compagnie Industrielle de Textiles Artificiels et Synthetiques during the interim period until the Hartford plant is in production.

It is claimed this new fiber justifies a generic name of its own due to its radically different properties from rayon and other man-made cellulosic fibers. It is further maintained that giving a generic name to this product will be carrying out the intent of Congress under the Act.

Announcement of the rights to produce this fiber in the United States (known formerly in the textile industry as Z-54) was made by Hartford Fibres August 13, 1959. Its outstanding features are outlined as follows: high wet strength, low breaking elongation in the wet state, high modulus in the wet state, high elastic recovery in the wet state, and relatively low degree of water absorption.

"Polynosic" is the Anglicized version of "Polynosique," which is the generic designation for this fiber in several European countries.

•

Record Syl-mer Promotion

The largest promotional campaign in the history of Syl-mer silicone finishes will be undertaken this year by Dow Corning Corporation.

In the past, the company has scheduled most of its promotional activities during the fall to highlight the wet-weather resistance of the finish. The 1960 promotion will stress the fact that there is a Syl-mer finish for every fiber and fabric and acquaint consumers with the year-round advantages of silicone-treated products. Emphasis will be placed on the positive values of Syl-mer grade finishes, which are said to include spot and stain resistance of the finish, its ability to impart a luxurious hand and wrinkle resistance to natural and synthetic fibers, and the easier care qualities it gives to apparel and home furnishings fabrics.

At the trade level, Dow Corning will continue to support apparel and home furnishings manufacturers as well as mills and converters with advertising in leading trade publications. These industry efforts are aimed at closer cooperation with other chemical companies licensed to make Syl-mer grade finishes.

These include American Cyanamid Co, Arkansas Co, Inc, The Cravenette Co, Metro-Atlantic, Inc, Refined Products Co, Soluol Chemical Co, Inc, and Warwick Chemical Div.

Dow Corning will continue to maintain its extensive hand-tag program to provide effective sales help for merchandise finished with Syl-mer brand silicones.

NCTE Representatives Visit US Cotton Field Station

High cotton quality, large yields, and streamlined merchandising of cotton in the San Joaquin Valley of California were the three objectives described to U S textile college officials who were guests of the Industry Committee in Bakersfield, Calif, on the occasion of the recent Annual Meeting of the National Council for Textile Education.

The textile educators visited "ranches" that averaged four bales of cotton to the acre last year; saw commercial cotton that normally ranges between 90,000 and 100,000 pounds per square inch tensile strength, and in some cases even stronger; and a cotton cooperative that is combining cotton classing, laboratory testing, punched-card tabulating machines and hugh mechanical bale-handling equipment to render quick and accurate service to its customers.

Hosts to the representatives of the seven textile colleges were: California Planting Cotton Seed Distributors, Harold L Pomeroy, president; Producers Cotton Oil Company, Harry S Baker, president; Calcot, Ltd, J Russell Kennedy, executive vice president; and the National Cotton Council, represented by Leonard Smith, director of utilization research.

Members of the National Council for Textile Education who participated in the meetings and tours included John H Dillon, president, Textile Research Institute, Princeton, NJ, and president of NCTE; Martin J Lydon, president, Lowell Technological Institute, Lowell, Mass; Malcolm Campbell, dean, and Edward A Murray, director of instruction, School of Textiles, North Carolina State College, Raleigh, NC; Gaston Gage, dean, School of Textiles, Clemson College, Clemson, SC; James Taylor, director, A French Textile School, Georgia Institute of Technology, Atlanta, Ga; Charles Knight, professor, School of Textiles, Alabama Polytechnic Institute, Auburn, Ala; and Ray Flege, director, Textile Engineering Dept, Texas Technological College, Lubbock, Texas. Other guests were Georg Heberlein, president, The Heberlein Co, Wattwil, Switzerland; and W George Parks, head, Dept of Chemistry, Univ of Rhode Island, Kingston, RI.

The textile educators supplemented their executive sessions with visits to the cottonseed oil mill of the San Joaquin Cotton Oil Company; offices laboratories and warehouses of Calcot, Ltd; and the U S Cotton Field Experiment Station at Shafter, Calif. In addition, the Industry Committee provided a tour in private airplanes over the entire San Joaquin Valley, with a visit and luncheon stop at the 66,000-acre ranch of Russell Giffen, at Huron, Calif.

TEXTILE EDUCATORS AND COTTON LEADERS VISIT U S COTTON FIELD STATION AT SHAFTER, CALIF———Standing, l to r: Malcolm Campbell, N C State College; J Russell Kennedy, Calcot, Ltd; Martin J Lydon, Lowell Technological Institute; James Taylor, Georgia Institute of Technology; Leonard Smith, National Cotton Council; Laurence Nourse, California Planting Cottonseed Distributors; Harry S Baker, Producers Cotton Oil Co; Ray Flege, Texas Technological College; George Parks, Univ of Rhode Island; and Harold Pomeroy, California Planting Cottonseed Distributors.

Sitting, l to r: John Turner, U S Cotton Field Station, Shafter; Congressman Harlan Hagen; Georg Heberlein, Heberlein Co, Wattwil, Switzerland; Brigette Heberlein; Charles Knight, Alabama Polytechnic Institute; John H Dillon, Textile Research Institute and president of NCTE; Gaston Gage, Clemson College; E A Murray, N C State College; and J Earl Coke; vice chairman, Bank of America.

At the executive meetings of the NCTE the deans discussed ways and means of increasing enrollment to meet the ever-growing demand for textile graduates; improvements in the curricula and courses offered by the various textile colleges; textbook requirements; textile research programs; and numerous other problems and responsibilities of textile education in the United States.

Elected as the new officers of the Council were Ray Flege (Texas Tech), president, and James Taylor (Georgia Tech), vice president. The posts of secretary and treasurer will be filled by appointments at a later date.

Other institutions represented in the National Council for Textile Education are New Bedford Institute of Technology, Bradford Durfee College of Technology, Rhode Island School of Design, Institute of Textile Technology, Rhode Island School of Design, Institute of Textile Technology, Massachusetts Institute of Technology, and Philadelphia Textile Institute.

•

Cyanamid Presents Unrestricted Gifts to PTI, NCSC

Under its program of financial aid to education, American Cyanamid Company is presenting an unrestricted gift to the Philadelphia Textile Institute and the School of Textiles at North Carolina State College. Announcement of the special gifts was made recently by Alden R Loosli, general manager of the company's Fibers Division.

The gifts are in recognition of the schools' continuing roles in helping the textile industry meet its growing need for trained personnel, it was asserted. In marketing its Creslan acrylic fiber, Mr Loosli said, Cyanamid will continue to seek qualified men and women for key jobs in its Fibers Division from the nation's leading textile schools.

•

NC State Textile School Revises Management Curriculum

North Carolina State College's School of Textiles has announced a major revision of its textile management curriculum. The purpose of the move is to provide textile graduates with a broad understanding of business management in addition to a basic knowledge of textile materials and processes.

Through courses in basic economics—in areas of production, pricing, marketing, and finance—textile students will have an opportunity to familiarize themselves with the principles governing the operation of successful business enterprises.

The revised textile mangement curriculum "has been planned for outstanding students who have management as their professional goal," the dean's office explained.

The curriculum will be available to students entering in 1960, and to many already enrolled in the School of Textiles at North Carolina State College.

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Homewood Field on JULY 2, 1931
The Maryland Polo Club played the 110th Field Artillery...
The Field was brightly lighted for the game.

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A J Farnworth (center), an Australian scientist engaged in research on wool finishing, conferred with members of the Cotton Chemical Laboratory who are engaged in cotton finishing at USDA's Southern Utilization Research and Development Division during a recent visit. Dr Farnworth is pictured in conference with J David Reid (left) and Wilson A Reeves, discussing new chemical treatments for cotton being developed at the Southern Division. The Division is engaged in an extensive program of research on treatments for wrinkle resistance and crease retention of cotton fabrics, water repellency, oil and water resistance, and other chemical finishes to improve the properties of cotton for specialized uses. Dr Farnworth developed the Si-Ro-Set treatment for permanent creasing of wool fabrics, a process now in use in this country. He is connected with the Wool Research Laboratories, Geelong, Australia.

Research scientists from industry and the U S Department of Agriculture are shown discussing "wash-wear" research on cotton during a recent research review and planning session at the Department's Southern Utilization Research and Development Division at New Orleans, La. The Department appoints industry representatives who meet annually with Southern Division scientists to review current cotton utilization research and make recommendations on new research approaches to help better cotton's position in the highly competitive textile market. Shown from left to right looking over experimental "wash-wear" garments made from cotton are W A Reeves, acting chief, Cotton Chemical Laboratory, Southern Division; N F Getchell, manager, Technical Section, Utilization Research, National Cotton Council, Washington, DC; Lindsay Dexter, assistant treasurer, Pepperell Mfg Co, Boston, Mass; and L L Heffner, Extension Service, N C State College, Raleigh, NC.

Properties of Cotton Containing Radiation Polymerized Acrylonitrile

Summary of paper by Jett C Arthur Jr, head of radiochemistry investigations, and Robert J Demint, associate chemist, at the United States Department of Agriculture, Agricultural Research Service, Southern Utilization Research and Development Division, New Orleans, La, presented at the American Chemical Society's Fifteenth Southwest Regional Meeting in the Capitol House Hotel, Baton Rouge, La on December 4, 1959.

Cotton, a versatile fiber, maintains its primary position in textile per capita consumption in the United States. In recent years, chemical modifications of cotton fiber to give it new and desirable properties have become major factors in cotton utilization. Cotton cellulose has very low chemical reactivity. In effecting chemical modifications of cotton, high temperatures or pressures or catalysts are used. The use of high-energy nuclear radiation to modify the properties of cotton cellulose is being investigated.

During the investigation of the mechanism of radiation-induced reactions of cotton cellulose, it was noted that massive dosages of high-energy gamma radiation induced major structural changes in the cotton cellulose molecule. However, at lower dosages, the changes were small, and the tensile strengths of the cotton fibers were not significant ly lowered. The use of lower dosages of radiation to polymerize unsaturated monomers onto cotton was indicated. Further, if the monomer could be polymerized inside the cotton fiber, this should give a fiber with new properties.

The properties of cotton fibers have been modified by exposing the fibers in the presence of acrylonitrile monomer, a monomer easily radiation polymerized, to high-energy cobalt-60 gamma radiation. Using aqueous zinc chloride as the solvent, relatively large quantities of acrylonitrile monomer were applied to cotton and radiation polymerized onto the cotton. The treated cotton was then extracted overnight at room temperature with N,N-dimethylformamide, a solvent for polyacrylonitrile, to remove any loosely adhering polymer. After extraction, polymer, retained on the cotton, ranged to about 25 percent by weight. Electron microscopic examination of the cotton indicated that the polyacrylonitrile was located within the fiber at the inner part of the cell wall, extending completely around the lumen of the fiber. There was only a small decrease in breaking strength, significant increase in elongation at break, and a decrease in stiffness of the fibers. The results indicated a possible new approach to the preparation of chemically modified cottons having desirable properties.

•

USDA Home Economics Committee Advises Studies on Launderability

Factors affecting launderability of modern fabrics need intensive study, according to members of the U S Department of Agriculture's Home Economic Research Advisory Committee, who met in December in Washington for the Committee's Annual Meeting.

Present research on soiling and effectiveness of laundering chemicals should include evaluation of fluorescent "whiteners" now incorporated in laundering agents to brighten colors and mask grayness and yellowness in white fabrics, the Committee stated.

Established under the Research and Marketing Act of 1946, the Committee is made up of authorities in home economics and related fields from all over the nation. Its detailed recommendations for home economics research to be undertaken by USDA has been submitted formally to the Department. Copies of this report may be obtained from the Committee's executive secretary, Robert E Stevenson, Office of the Administrator, ARS, U S Dept of Agriculture, Washington 25, DC.

•

2nd World Congress for Man-made Fibers Set for 1962

The Second World Congress for man-made fibers will take place in London, England, May 15-18, 1962.

It is planned that speakers of International repute will address the Congress on subjects of general interest, and technological and economic matters affecting textiles will be discussed at working meetings. Particular attention will be given to future developments in man-made fibers and their place in modern life.

It is anticipated that two to three thousand delegates will be entertained during their visit with spectacular displays in the realm of the arts as well as of fashion.

Employees at the Chemstrand Corporation's nylon plant at Pensacola, Fla, on December 12 began establishing a new world's safety record for textile plants, completing 17,106,186 consecutive man-hours without a disabling injury and exceeding the previous record they set in 1957. On hand officially to change the plant's safety bulletin board to reflect this continuing new achievement were, right, Carolyn Bolton, a member of the plant central safety committee; F G Gronemeyer, Chemstrand vice president and director of nylon manufacturing; and Guy A Booker, plant safety supervisor. Other members of the committee looking on at left are W O Nelson, Bryant Wells, and Virgie Gunter.

European Textile Study Tour

"Fashions and Textiles" will be the theme of a six-week study tour to be offered by the Southern Illinois University School of Home Economics during the 1960 Summer Session.

Under the direction of Adeline M Hoffman, professor of home economics and chairman of the department of clothing textiles, the group will visit nine countries, leaving by plane from New York June 29 and returning August 14. On the continent, the group will travel by chartered air-conditioned bus.

The study tour will carry eight quarter hours of graduate credit and while planned primarily for home economists working toward advanced degrees, elementary and high school teachers and students in other subject matter fields may apply the credit toward advanced degrees as an elective.

The group will visit the salons of leading designers to see fall fashion collections and will visit mills, factories and showrooms in the centers of the textile industry in several countries.

The cost of the European Study Tour will be $1,295, which will cover travel to Europe and return, travel in Europe, hotels and meals. Further information may be obtained from Dr Hoffman, School of Home Economics, Southern Illinois Univ, Carbondale, Ill.

PTI Alumni Banquet Postponed

The Philadelphia Textile Institute Alumni Association's annual banquet, usually held in February, has been postponed until a date yet to be established in April to be held in conjunction with dedication exercises of the college's new $650,000 student union building.

An all-day program is being planned in conjunction with dedication ceremonies and it was felt by both college and Alumni Association officers that having the Alumni Banquet at this time would afford out-of-town graduates an opportunity to re-familiarize themselves with the college while at the same time attending their annual dinner get-together.

The new building was opened to students for limited use including cafeteria and lounges upon their return from the Christmas and New Year's holidays. Complete use of the building will not be possible until sufficient funds have been raised by the Philadelphia Textile Institute Foundation for needed furnishings.

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Job Opportunities for FIT Grads at Record Pace

Job opportunities for young executives from apparel textiles and home furnishings manufacturers reportedly are coming to the Fashion Institute of Technology at a record pace this year.

Graduates specifically trained by FIT in the fields of management and engineering are said to be in demand by the fashion industries for such positions as plant engineer, time-study engineer, industrial engineer, methods engineer, factory manager, production controller and other executive positions. It is claimed that, at the present time, there are more placement requests than graduates.

FIT is a two-year accredited college under the program of the State University of New York, which grants a degree of Associate in Applied Science. The Management program includes such courses as Production Management, Time and Motion Study, Industrial Organization Production Control, etc, all geared to special requirements of the fashion industries and plant layout. It is one of several types of programs offered by FIT. Others include Fashion Design, Retailing, and Merchandising.

The College is housed in a new, nine-story $12 million building at 227 West 27th Street, New York, NY, with modern laboratories, classrooms and general facilities. It is operated with both day and evening divisions and provides both general college education and specific professional education.

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$25,000 in Scholarships Awarded at LTI

Scholarships amounting to more than $25,000 have been awarded to Lowell Technological Institute students for the current year and many are still available, according to Dean of Students Richard W Ivers, chairman of the scholarship committee.

Scholarships are awarded in the fields of textile chemistry, physics, paper, leather, and engineering by industrial concerns, and general scholarships by the city of Lowell and the Commonwealth of Massachusetts.

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"Textile USA" Stickers Again Offered on Free Basis

Over 30,000 stickers promoting textile products "made in USA" have been distributed within the textile industry during the past year.

The colorful stickers which say "Made in USA—Gives Quality You Can Trust" are available without charge in reasonable quantity. Large quantities are offered at cost as a public service by Stowe-Woodward, Inc, Newton Upper Falls, Mass, and Griffin, Ga.

• NAMES IN THE NEWS •

Jefferson

Pilblad

Albus

General Latex & Chemical Corp, Cambridge, Mass, recently announced the appointment of *William H Jefferson* to vice president, general sales manager. Jefferson joined the company in 1956 as district sales manager of the Ashland, Ohio, subsidiary. In 1957 he became general manager of that plant and in 1958 moved to the Cambridge, Mass, office as assistant to the president.

His new appointment is part of a reorganization of the General Latex & Chemical Corp sales staff, brought about by the addition of several new products to its product line. *H G Brousseau*, technical sales manager, compounds and dispersions; *R V Does*, technical sales manager, natural and synthetic latices; and *J B Blomstrom*, technical sales manager, urethane foams, have been appointed to help promote these products effectively in the two fields.

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Garret J Garretson II, vice president, Turner Halsey Co, was elected chairman of the Textile Section, New York Board of Trade, Inc, at the Annual Meeting held at the National Republican Club, New York, NY, on January 20.

William H Dribben, assistant vice president, Cone Mills, Inc, was reelected vice chairman, and *John Bendheim*, vice president, M Lowenstein & Sons, Inc, was reelected treasurer.

Metro-Atlantic, Inc has announced the promotion of *Theadora Pilblad* to the position of supervisor of the control Laboratory.

Miss Pilblad joined the chemical staff of Metro-Atlantic, Inc in 1947 and since then has served in various capacities in product control and chemical analysis.

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Quaker Chemical Products Corp, Conshohocken, Pa, has appointed *James B Irvine* field process engineer in its Textile Division. He will be operating in Illinois, Indiana and Wisconsin, replacing *Robert Stewart*, formerly in that area, who was promoted to manager of the Textile Division.

Mr Irvine, in his new position, will handle Quaker Chemical's specialty chemical products for textile and paper processing mills. He has been with Quaker Chemical for 4 years in its Textile Division laboratories and has held positions on all levels embracing research, product development and field service.

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Charles E Daniels, a senior in textile chemistry at North Carolina State College, has been named the 1960 winner of the $225 Geigy Dyestuffs Scholarship at the college.

Daniels last year was selected as the first winner of the scholarship, and his recent appointment constitutes a renewal of the award.

Charles P Albus has joined the polymer research group of Colton Chemical Co, a division of Air Reduction Co, Cleveland, O. He has been a member of the research departments of Hercules Powder Co and General Aniline & Film Corp, and holds a number of patents in the application of homopolymers and copolymers.

Robert K Sponagel has been appointed general manager of the Toms River Division, Toms River-Cincinnati Chemical Corp. Dr Sponagle has been a vice president of the corporation since October 1, 1956.

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Graeme G Whytlaw has been named director of textile development for AviSun Corp, an equally owned affiliate of American Viscose Corp and the Sun Oil Co. In his new capacity, Mr Whytlaw will be responsible for AviSun Corp's textile processing research and textile evaluation programs. Prior to his promotion, he was manager of the applications research and development section in the American Viscose Technical and Textile Service Department.

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Peter C Hereld has been appointed planning manager of the chemicals group of Sun Chemical Corp. He was formerly executive vice president of Chemo Puro Mfg Corp.

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